

# THE IRON AGE

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## Costs of Electric Steel Melting

Comparison of Methods Shows Basic Higher Than Acid\*  
—Power Charge, Electrodes and Labor  
Chief Controlling Items

BY CHARLES WELLMAN FRANCIS

IT is the purpose of the author in this article to give the readers the benefit of a cost calculation which is based on actual operating data taken from practice in the field of electric furnace work. Elaborate charts and tables for figuring costs and methods for handling the same might be given, including overhead, depreciation, insurance, etc., but, after all, there would be no meaning to such information which would only apply to one particular case. However, if figures, giving the material and labor used in an electric furnace heat, are tabulated to arrive at a

der. Assuming the use of a 3-ton furnace, charged about 15 per cent over capacity, using raw materials at prices f.o.b. Pittsburgh, the table shows the comparison in detail of acid and basic electric furnace operations.

### Foundry and Purchased Scrap

Considering the items as they appear in order in this table, let us take up the problem of the foundry scrap. This item includes all gates and risers that have been cut from the castings together with floor

Table of Comparison in Detail of Acid and Basic Electric Furnace Operation,  $3\frac{1}{2}$  Tons per Heat

Materials	Price per Net Ton	Acid Practice		Basic Practice		Remarks
		Amount	Cost	Amount	Cost	
Foundry scrap	\$13.80	2,760	\$19.04	2,760	\$19.04	40 per cent of charge
Punchings	15.00	1,035	7.76	1,035	7.76	15 per cent of charge
Plate scrap	13.20	1,380	9.11	1,380	9.11	20 per cent of charge
Heavy axle turnings	13.20	1,725	11.39	1,725	11.39	25 per cent of charge
Melting loss, 3 per cent	0.42	207	1.43	207	1.43	
Scrap handling	0.50	...	1.70	...	1.70	
Laboratory costs	0.50	...	1.70	...	2.00	
Ferromanganese	67.50	55	1.86	38	1.28	
Ferrosilicon	60.00	27	0.81	40	1.20	
Aluminum	380.00	6	1.14	4	0.76	
Ganister	...	130	1.70	...	...	
Silica sand	...	50	1.70	...	...	
Lime	12.00	...	...	150	0.90	
Coke	15.00	...	...	40	0.30	
Dolomite	20.00	...	...	175	1.74	
Electricity	1½c.	2,040	30.60	2,550	38.25	
Electrodes	180.00	74.8 lb.	6.73	102 lb.	9.18	
Furnace and roof brick	0.50	...	1.70	...	2.55	
Fire clay	0.50	...	1.70	...	1.70	
Fuel oil ladle heaters	2.00	...	6.80	...	6.80	
Miscellaneous operating expenses	1.00	...	3.40	...	3.40	
Labor	...	...	4.25	...	6.39	
Total	...	7,189	\$114.70	7,185	\$126.88	
Cost per net ton	...	...	32.77	...	36.25	

cost per ton of molten metal in the ladle, one will have information which is valuable and applicable to any foundry.

For such comparison the writer has chosen for his basis of figuring the ordinary type of mild steel for castings, analyzing 0.20 to 0.25 per cent carbon; 0.65 to 0.75 per cent manganese; 0.30 per cent silicon, acid steel specification for phosphorus and sulphur being 0.06 per cent or under while the basic specification to be met is 0.04 per cent phosphorus and sulphur or un-

scrap and any small ladle skulls. This total usually amounts to from 40 to 50 per cent of the weight of the metal melted which is, of course, exclusive of the 3 per cent melting loss. Consequently in order to use up all of the foundry scrap each charge must contain at least 40 per cent foundry scrap which is figured at the average cost of the purchased scrap.

The purchased scrap is made up of the best grades of quick melting basic scrap and it will be noted that the same charges are figured for both acid and basic heats. By this method the most outstanding differences between the two types of practice can be noted. Using punchings, plate scrap and heavy axle turnings on the acid bottom will generally give a final analysis of approximately 0.055 per cent phosphorus and sulphur,

\*In the issue of July 27, p. 201, the author discussed the choice of an electric furnace; in the issue of Aug. 3, p. 277, the economy features of electric foundry design and equipment; in the issue of Aug. 10, p. 345, acid electric furnace practice; and in the issue of Aug. 17, p. 421, basic electric furnace operation.

while with the use of two slags in the basic furnace a specification of 0.04 per cent phosphorus and sulphur as an upper limit can be readily met.

A figure of 50c. per net ton is allowed for handling the scrap which includes its unloading from railroad cars to the stock bins, exclusive, however, of charging the furnace which is taken care of in another item.

#### Laboratory Costs and Repairs to Bottoms

The laboratory costs of 50c. per ton figure approximately \$1.75 per acid heat and \$2.00 per basic heat, the reason for the difference being that, in the case of the basic heat, an additional preliminary analysis for manganese is usually made which is dispensed with in the acid heat because the manganese is practically all lost in the acid melting and a 100 per cent addition is generally necessary. However less ferrosilicon is used in the acid heat, the reason being self-explanatory. In the case of aluminum, however, we have to deal with an addition which is up to the melter himself, no specified amount being necessary; the entire item might be considered a precautionary addition. Two pounds per ton can be considered ample under these conditions in both acid and basic practice.

It is not the easiest matter to figure costs on bottom repairing and slag materials, due to the fact that the amounts used fluctuate according to the working of the furnace. For example the amount of rust on the scrap has considerable to do with the amount of slag necessary, but the figures given in the table may be considered sufficient for these purposes.

#### Electric Power and Refractories

The electric power supplied to the furnace can be readily measured by the watt hour meter connected in the circuit. The current is not usually supplied on a flat rate but the demand and peak-load enter into this cost appreciably. Good consistent acid operation will

utilize an average of approximately 600 kw. per net ton of metal melted while basic operation, which is considerably slower due to the manipulation of the slags, will consume 725 to 750 kw. per net ton of metal melted. The electrode consumption is consequently less in acid operation than in basic operation, the element of time entering into this question.

Refractory cost is another item which varies considerably. The less expensive acid refractories do not last as long, due to the fact that hotter metal is usually poured from the acid furnace and also because less protection is offered by the slag. On the other hand the more expensive basic refractories have a longer life, due to colder metal being poured and the protection which is given by the heavier basic slag. This additional expense is lessened considerably by using acid refractories for the roof and sidewalls above the slag-line on the basic furnace. In this case the costs of acid and basic refractories will be nearly equal, and in instances where heavy work only is being poured in the foundry, the cost of the acid refractories may even exceed that of the basic.

The item of operating expense includes the incidental operations around the furnace such as furnace tools, mechanical repairs, etc. The same amount of labor is necessary for operating an acid and basic furnace, but here the element of time plays an important part, approximating about \$2.00 per hr.

#### Three Controlling Items

A close analysis of the table will show that there are three items which enter into the cost of electric steel which are responsible for practically the entire difference, namely, power, electrodes and labor. The governing factor throughout is the element of time. In other words if an acid and a basic heat could be made in the same length of time, other factors being equal, the cost would be practically the same for both.

## PROPOSED ADDITIONS

### Trumbull Steel Co. Will Build More Open-Hearth Furnaces—Other Valley Plant Plans

Plans of the Trumbull Steel Co., Warren, Ohio, provide for the installation at some future time of eight additional open hearth furnaces. The company now has a complement of seven open hearths, but its blooming mill and bar mill have sufficient capacity to roll the output of eight additional units. In recent years, the company has been gradually increasing its capacity, until it can now produce 40,000 tons of steel products per month, including billets, sheet bar, blue, black and galvanized sheets, galvanized and painted roofing, electric sheets, tin mill black, tin plate, hoops, bands and hot and cold-rolled strip steel.

It employs about 6000 men, or nearly half the working population of Warren, and is self-contained. Its ore mines in Minnesota will take care of its present needs for 15 or 20 years. The Trumbull Coal Co., a subsidiary, operates coal mines in Greene county, Pennsylvania. The Trumbull-Cliffs Furnace Co., in which the Trumbull Steel Co. is a joint owner, operates the largest blast furnace in the Mahoning Valley, with a rating of 600 tons per day, but which can easily produce up to 700 tons daily under normal circumstances. The ore yard is 500 ft. long and has a capacity of 500,000 tons.

Another projected expansion in the Youngstown district is a four-mill addition to the sheet plant at Niles, Ohio, of the Falcon Steel Co. The Brier Hill Steel Co. has developed plans for an extensive expansion program, which will probably be worked out, at least in part, unless a merger is effected with an interest supplying additional capacity. It is understood the program of the Brier Hill company calls for the expenditure of between \$7,000,000 and \$8,000,000. No exten-

sions have been authorized, however, pending merger developments.

The principal current construction in the Mahoning Valley by steel interests includes the erection of a mechanical puddling plant at Warren, by the Youngstown Steel Co., and a six-mill addition by the Newton Steel Co., at Newton Falls, Trumbull county. This expansion will increase the facilities of the plant to 16 complete units, and bulk of the output will consist of full finished sheets.

### Will Make Recommendations as to Periods of Depression

WASHINGTON, Aug. 29.—Announcement was made last week that the President's Conference on Unemployment has begun to prepare recommendations for lessening the severity of intermittent business depressions, and in consequent reducing unemployment. After having been in the hands of a number of experts for several months, the report on "Unemployment and Business Cycles" has been transmitted to the Committee on the Business Cycle, and the latter is now at work on its recommendations. Final action on the recommendations will be taken when the committee meets in Chicago on Oct. 2. The committee consists of Owen D. Young, chairman; Joseph H. DeFrees, Matthew Woll, Clarence Mott Woolley, Miss Mary Van Kleeck, and Edward Eyre Hunt. The report, with an introduction by Secretary of Commerce Hoover, will be published on Dec. 1.

Employment in Great Britain is improving. The number of unemployed on July 31 is given as 1,400,000, against 1,455,000 at the end of June. It is officially stated that Great Britain has paid out £85,000,000 under the unemployment insurance acts, since November, 1920. At an average of \$4 per £1, this amounts to \$340,000,000.

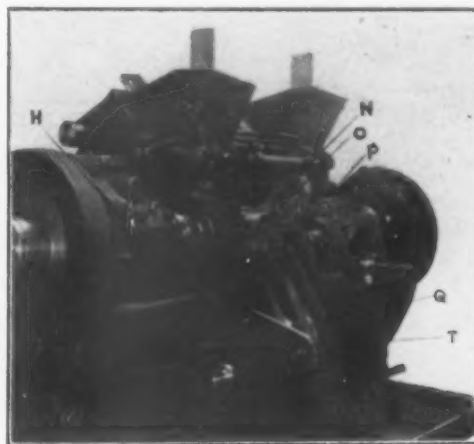
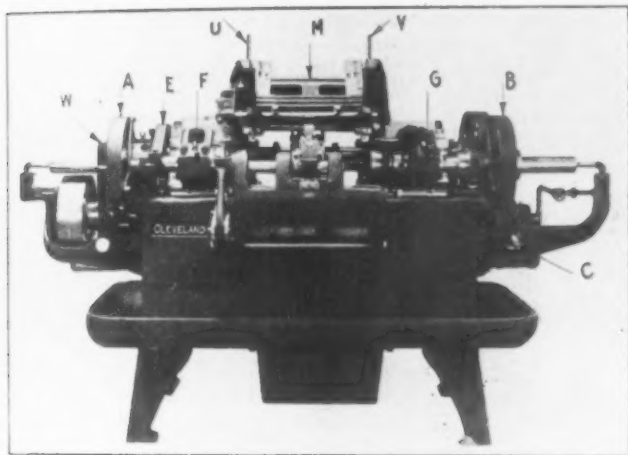
## STAYBOLT THREADING MACHINE

Full-Automatic High-Speed Unit Threads Both Ends Simultaneously—Operation Outlined

The Cleveland Automatic Machine Co., Cleveland, has placed on the market a fully automatic machine which, although designed primarily for threading simultaneously both ends of a forged or rolled staybolt is equally useful for all double-ended turning and threading work, such as studs, pipe nipples and short shafts. Both threaded ends are in line, and the lead continuous from one threaded portion to the other.

The machine has two heads and is adapted to high speed operations. It will thread staybolts up to 1 15/16 in. in diameter and from 7 to 18 in. long, the time to complete a bolt being from 35 to 60 sec., according to the diameter and length of thread. Little time is required for chucking the work, the time of cutting a bolt being that required for threading the longest end. One man can operate five machines, his job being to keep the magazine full, keep the chasers sharp and remove the finished bolts.

The general construction of the machine may be noted from the accompanying illustrations. It is made



Double-Ended Threading Machine for Staybolts and Similar Work. Front view is shown at left and details of clamping jaws above

up of a hopper which holds the supply of staybolt blanks, a work-feeding mechanism, a pair of floating jaws which hold the staybolt and present it to the dies so that both ends are in exact alignment, two spindles to carry the die-heads and a large lead screw with long bronze nuts. Cam mechanisms operate the various parts automatically.

The spindles are driven from the main driving shaft by gears at A and B. Helical gears drive the feed shaft at C, which in turn drives the camshaft through change gears located in a box at the rear. Gears at E drive the lead screw which is mounted directly back of the die spindles. During the cut, the lead screw controls the two die slides, F and G, after which the heads are opened by stops shown at H in the detail. The lead screw nuts are tripped by cams and the slide returns rapidly by means of cams on the cam drums. When the die heads are just clear of the work, the work-holding jaws open and move backward. The finished staybolt is then ejected, dropping into the pan, and a rough staybolt automatically placed in position for threading.

The magazine is located at M and the carriers at U and V. Part of the backward movement of the toggle mechanism for controlling the work-holding jaws withdraws the slide on which the jaws are mounted, permitting another staybolt to drop from the magazine. The carriers then move down, bringing the blank in line with the dies. The toggle mechanism advances the slide with its jaws open until the latter are ready to close on the staybolt, at the same time seating the bolt against two V-blocks provided to line it up. The jaws then close on the bolt, and the two carriers return to their upper position, the die moving forward.

Allowances for variation in the diameters of the centers of the bolts are made by the bearing spring, N, in the upper jaw. The two parts of the gripping jaws

are pivoted on a stud and operated by the toggle shown at P in the detail, which is operated by the lever Q. The lever in turn is controlled by cams through another lever. The lower end of the slot in lever Q is enlarged to give a slight movement, permitting the jaw slide to shift forward or back and the jaws to oscillate or float on the stud to accommodate a bent staybolt. A shearing pin is provided to prevent damage should a blank be very much out of shape.

Starting and stopping is controlled by handle W which operates the friction clutch. A heavy stream of cutting oil is pumped through each spindle to wash out chips and cool and lubricate the chasers.

### No Profiteering in Farm Implements

That there was no profiteering in the farm equipment industry either during or after the war is confirmed in Part 3 of the Report of the United States Commission on Agricultural Inquiry, made public at Washington. To quote in part: "It will be noted that

the peak reached in prices of agricultural implements over 1913 or 1914 was 75 per cent, whereas the wholesale prices of all commodities reached a peak of 172 per cent. From investigations made by this commission, it was also found that the present factory prices of agricultural implements, if power equipment and twine are not included, when compared with prices of 1914, show an increase of 41 per cent; if power equipment and twine were included in the computation, the increase in prices over those of 1914 would be less than 20 per cent, while the present prices of all commodities when compared with 1914 prices show an increase of 52 per cent." (The comparisons are between prices in January, 1922, and those prevailing before the war.)

### Detroit Scrap Market Active

DETROIT, Aug. 28.—The local scrap market is active and shows a tendency to follow the advances registered in pig iron. Relatively little scrap produced in Detroit is consumed here, going principally to Cleveland and Valley points, and prices realized are governed largely by what can be obtained from mills and furnaces in those districts. The local production, judging from the tonnages offered by automobile concerns, so far shows no decline. The Dodge awards will be announced during the week and will include around 3000 tons of borings, turnings, flashings and hydraulic compressed, with perhaps 500 tons of shoveling, melting, busheling and miscellaneous grades. Good machinery scrap is in demand, reflecting the shortage of pig iron.

The following prices are on a gross-ton basis, f.o.b. cars producers' yards:

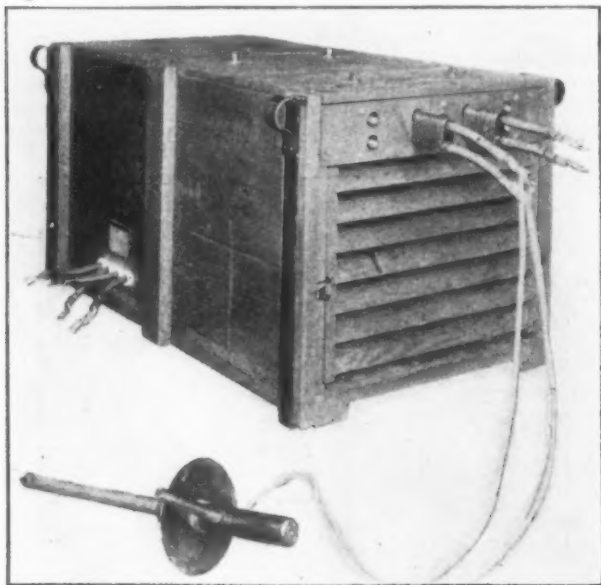
Heavy melting steel.....	\$14.50 to \$15.50
Shoveling steel .....	14.00 to 15.00
No. 1 machinery cast.....	16.00 to 16.50
Cast borings .....	12.00 to 13.00
Automobile cast scrap.....	20.50 to 21.50



### Arc Rivet Cutting Apparatus

A 600-amp. arc-welding and cutting machine operated by alternating current and adapted especially to rivet cutting, but for use also in carbon arc welding, is being offered by the Electric Arc Cutting and Welding Co., Newark, N. J.

As an example of the economy of the machine in cutting rivets, it is stated that an hourly outlay of 10 to 15 cents for power and practically no other costs excepting one man's labor, will cut from 100 to 200 rivets per hour. The average cost per rivet is  $\frac{3}{4}$  cents. In addition to claims as to being the cheapest method of rivet cutting, it is further said to be the quickest



Welding and Cutting Transformer. Both the core loss and magnetizing core are cut off when not in use

and is far safer than rivet busting, with the additional advantage that the sheet itself is not impaired.

The arc will cut any metal. For heavy work or for careful work gas is recommended, although for rough work, such as cutting up scrap or for work requiring machining subsequently, the electric arc is said to be the cheaper if the pieces are not too thick. For cutting non-ferrous metals this method is said to be pre-eminent. For straight arc cutting the thickness that can be economically "eaten through" by the arc lies between 2 and 6, depending on price of power and other considerations. If the method of nicking and breaking is used, the machine is said to be employed to advantage. It is to be noted that the cutting characteristics of the machine are different from the welding characteristics. The voltage across the arc is higher and the drooping characteristics desirable in welding for a close arc are pared down in arc cutting. The machine gives lower voltages with increase of current.

A high grade of silicon steel of low current density, double asbestos covered is used in the construction of the transformer and the primary magnet wire has micanite between the layers. Double micanite and  $\frac{1}{4}$ -in. asbestos spacers are placed between the primary and secondary. There are large air ducts between the iron and the copper and between the copper layers, a special bucket-type ball-bearing blower being provided to drive air through these spaces continuously when power is being used by the transformer.

Both the core loss and magnetizing core are cut off when not in use by means of a magnetic switch in the primary, which remains open when the electrode is not in contact with the work or when the arc is not drawn. This is accomplished by a small pilot transformer of 100 watts capacity, which also operates the blower. The pilot transformer circuit is made by the electrode touching the work and the primary load used to hold the magnetic switch in the closed position. When the pilot circuit has been broken by the auxiliary contact having been opened by the closing of the main con-

tacts and the cutting current broken at the arc, the magnetic switch opens automatically and cuts the machine, leads and even the magnetizing current dead. This is a patented arrangement and is claimed to be both an effective safety device and a money saver.

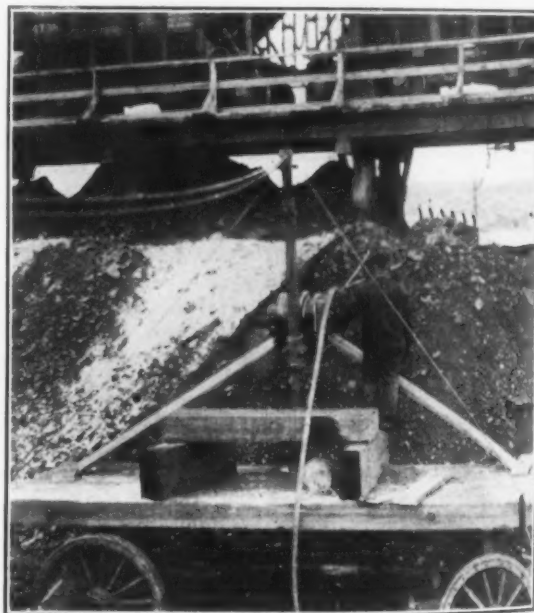
A description of the company's arc welding apparatus appeared in THE IRON AGE of Sept. 12, 1918. In addition to the 600-amp. machine described above a type CW, 300-amp. machine for combination welding and cutting is available, and also a 1000-amp. machine for cutting alone.

### Machine Replaces Men in Grading Coal Pile

An iron mining company in the Lake Superior district, fortunate in finding available a large supply of coal, was confronted with the problem of storing it. Storage facilities were not adequate and the problem resolved itself into either enlarging the coal dock or piling the coal in such a manner that it could be stocked with the existing facilities. The latter course was followed.

As shown in the accompanying view of a section of the dock, coal is dumped below the trestle. Grading off is necessary to permit dumping the successive loads of coal, and hand shoveling was the method first employed, twelve men, six on each side of the trestle, being used for this work. Later on a mechanical method for doing the work was installed, the Ingersoll-Rand company's Little Tugger hoist equipped with drag scraper, as shown in the illustration, being pressed into service. With this equipment one man operated the scraper in both the forward and backward motions.

The machine illustrated is a small double-drum hoist developing 7 to 8½ hp. on 60 to 80 lb. air pres-



Apparatus Used in Grading Coal Pile. One man operates the scraper in both the forward and backward motions

sure. One drum is called the haulage drum, the other the tail-rope drum and when either of these is engaged the other runs free. The haulage rope is laid from the drum directly to the front of the scraper, the tail-rope being laid from its drum to a snatch block or sheave mounted conveniently behind the coal pile, and attached to the back of the scraper by a clevis.

### Lull in Scrap Buying

YOUNGSTOWN, Aug. 29.—There has been somewhat of a lull in scrap buying, as melters are "sitting tight" for the time being and awaiting developments. One interest recently contracted for hydraulically compressed sheets at \$17, but strictly specified that the material is to be Grade A. Other contracts for this class of scrap, but of inferior grades, have been made lately at \$16.25. Heavy melting is nominal at \$18.25.



# Iron Castings by the Centrifugal Process\*

British Plant Producing Piston Ring Sleeves and Engine Cylinders  
—Chilled Wheels and Rolls—Unique Melting Arrangement—Chemical and Physical Properties

BY F. E. HURST

**T**HE process, as at present operated in the works with which the author is connected, is being applied to cast iron for the purpose of producing large size castings for piston ring sleeves, gas, oil, and Diesel engine cylinder liners, chilled wheel and chilled roll castings, and cylindrical castings of all descriptions. The machines at present in operation are capable of producing castings up to a maximum length of 36 in., and of varying diameters from 10 in. up to 30 in. Other machines for the production of both smaller and larger-sized castings are at present in the course of construction.

The principle of operation of the centrifugal casting process consists of the introduction of molten metal into the mold or die, which is rapidly rotating about a horizontal axis. For cylindrical articles no core is used, and a perfectly cylindrical interior surface is produced direct by virtue of the centrifugal force under which the metal solidifies and the rate of introduction of the metal into the mold. Castings other than chilled castings are produced at the author's works, directly machineable, a feature which is arrived at by strict control of the chemical composition of the metal and the details of the mold and casting operation. Fig. 1 shows some of the product up to date, consisting of from 30-in. diameter flanged sleeves for piston rings to cylinder liners 36 in. in length. Attention is directed to the 14-in. diameter cast iron wheel with a chilled tread for use on small trucks and pit trams.

The machine consists essentially of a face-plate mounted on a shaft carried in bearings arranged to be rotated at the required speeds. The molds are attached to the face-plate by bolts, and when rotating the molten metal is introduced by tilting a specially designed pourer which has been moved into position inside the rotating mold.

The molds themselves are constructed in two parts: An outer holding casting which is arranged to bolt to the faceplate and an inner liner which is arranged to fit loosely inside the holder casting. The liner is bored internally to the size and dimensions of the outer sur-

face of the casting to be produced, and the outside of the liner is bored to fit the holder casting, which is designed to take a group of a series of liners, the dimensions of which are arranged to produce flanged cylindrical castings of a standard series of dimensions. By this means the cost of the renewals of dies for the production of a given size is considerably reduced, and as a rule the series of holders will take most special liners required for the production of castings of special shapes.

The back end of the liner next to the face-plate of the machine is closed by a plate attached to the end of a screwed rod passing through the hollow shaft of the machine and arranged for the ejection of the castings. The front of the liner is closed by an annular plate having the internal diameter of the annular ring corresponding to the internal diameter of the casting to be produced. This plate is arranged to be removable after the completion of the casting operation, in order to allow of the extraction of the casting.

As indicated, a series of standard dimensions of flanged cylindrical castings has been drawn up, and the installation of the necessary holders and liners, to produce these, makes it possible to produce a wide variety of cylindrical castings within the limits of dimensions mentioned above and with comparatively trifling alterations. For example, the only alteration to the die required to produce castings thicker than a given standard casting is an alteration to the diameter of the inner circle of the closing

plate. Castings shorter than the standard range of size can be produced by an alteration in the position of the ejector plate. Castings having specially shaped flanges or external projections require a special liner, but here again, in the majority of cases, a special liner only is required, and the expense is not necessarily prohibitive. Castings having internal projections, or closed cylinders or dish-shaped castings, cannot yet be produced on a commercial basis.

For larger-sized castings a somewhat different scheme is under installation, but this possesses sufficient flexibility not to place an undue burden on the cost of the castings. This scheme consists essentially of the use of a complete mold or die which, on comple-

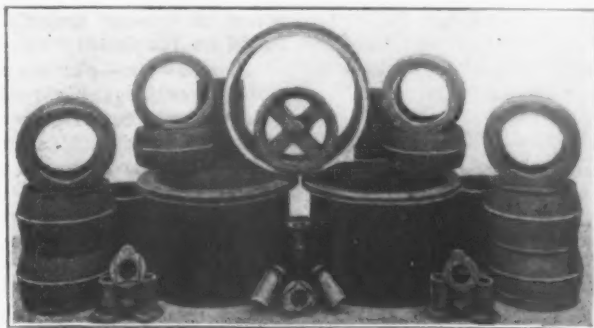


Fig. 1 (Above).—Some of the Cast-Iron Products Made Centrifugally in Great Britain

Fig. 2.—The Novel Cupola and Its Accessories, Known as the Hurst Melting Equipment



\*From a paper, "Centrifugal Castings," presented before the West of Scotland Iron and Steel Institute and published in the Society's Journal for January-February, 1922.

tion of the casting operation, is arranged to be removed from the machine along with the casting for stripping purposes. For the production of large numbers of single castings more than one mold would be in progress in order to maintain the sequence of operations. In the case of a casting where the initial cost of more than one die would be prohibitive, it can be arranged to interpose the single die in series with another die for a different casting, thus still maintaining the sequence of operations. The operation is very similar to the casting and stripping of ingots in an open-hearth steel shop.

#### Chemical Composition of Centrifugal Castings

So far as experience has gone up to the present, it is found that the influence of the various constituents of cast iron follow the same rules as in the case of sand castings. There is an increase in the percentage of rejected hard castings as a result of the increase in sulphur content. This is corrected by a slight increase in silicon content. In cases like these there is no doubt that in the centrifugal casting process the castings are more sensitive to the effects of small changes in the chemical composition.

**Carbon.**—The advantage of a somewhat lower total carbon content than that of normal foundry irons is well known, and following on this practice it is endeavored to produce high grade castings for cylinder and piston ring work in cast iron with a total carbon content within the range of 2.75 to 3.00 per cent. This

Table 1.—Variations in Combined Carbon

Sequence No. of Casting	Inside Surface C. C., Per Cent	Outside Surface C. C., Per Cent
1	0.66	0.47
4	0.49	0.00 trace
8	0.55	0.10
12	0.17	0.15
16	0.42	0.05
20	0.22	0.15
24	0.24	0.14
28	0.22	0.14

is rendered possible by the use of the special melting plant described later.

The combined carbon, on account of the higher silicon content usually worked to, is lower than what is usually obtained in ordinary foundry practice. This is advantageous in castings such as piston rings and the like, which are subject to comparatively high temperature conditions. A series of figures given below, Table 2, show that the variations in combined carbon within the limits of the figures given have practically no influence on the tensile strength value. Starting with a cold mold at normal temperature, the first few castings are invariably chilled on the outer surface or the surface next to the metal mold. As the temperature rises, the chilled surface on the castings rapidly disappears, and the combined carbon gradually reaches a constant value. The figures given serve to show the variation in combined carbon with the order of casting.

The remarkable feature of this series of figures is that the combined carbon is higher on the inside surface than the outside. This is worthy of recording, and is met with quite frequently. The author has preserved a specimen for future examination of a casting showing a layer approximately  $\frac{1}{8}$  in. deep on the outside surface of the casting, which on examination shows no trace of combined carbon. These figures are included with the object of showing the possibility of variation in the combined carbon values. The average value usually maintained is from 0.3 to 0.5 per cent, unless specially desired when higher values are readily obtained by reduction of the silicon content.

The proportion of graphite present naturally varies with the combined carbon; no case has yet been met of any segregation of the graphite during the casting process. This is strong confirmatory evidence that in cast iron below and up to the eutectic composition the graphite does not form in the liquid state, and is formed quite late in the solidification range. If the contrary were the case, then one would certainly expect to find some indication of the segregation of the graphite to the inner surface of the casting, particularly in view of the wide disparity in the specific gravities of graphite and iron.

**Silicon.**—The average value of the silicon in centrifugal castings is about 2.75 per cent. This is a somewhat higher value than is usually used in sand-casting practice for high grade work. Lower value than this can be cast.

**Sulphur and Manganese.**—Sulphur existing as the manganese-sulphur compound which, as is now known, is insoluble in cast iron at the temperatures usually met with in foundry practice, and is also lower in specific gravity, tends to segregate, under the influence of the centrifugal action, to the inner surface.

In castings of thinner cross-section the effect of the segregation is much less owing to the increase in rapidity of the solidification. The use of low manganese irons, or increased casting temperature accompanied with rapid pouring, tends to practically eliminate this segregation in all but very thick castings. As a general rule excess of metal is poured into the rotating mold, which is thrown out in castings of comparatively small length, and along with it the segregates in the shape of sulphur and slag inclusions which have collected on the inner surface.

**Phosphorus.**—For the successful production of centrifugal castings highly fluid iron is desirable. The well-known effect of phosphorus on this property would appear to be of considerable value in this process. Unfortunately the influence of phosphorus on the properties of centrifugal cast iron appears to be very undesirable and in so far as our investigations have gone it is largely to that element that low tenacity and, what is more serious, "brittleness" in centrifugal castings, is to be attributed. This particularly appears to be the case when the phosphorus is present in conjunction with fairly high silicon values. For high grade castings, therefore, on this account only, low phosphorus material is desirable, and a maximum of 0.60 per cent for special castings is now worked to. This is obtained by the use of steel scrap or hematite, preferably the former, and the necessary fluidity, and incidentally uniformity, is obtained by maintaining a high casting temperature in the melting plant specially designed for this purpose.

Before leaving the question of phosphorus, it is of interest to mention a curious tendency noticed on several occasions for the phosphorus to segregate to the outside surface of the castings. This the author believes is worth recording as a similar tendency has been noticed in the case of the eutectic in the die casting of copper aluminum alloys.

The composition of some of the different articles recently made on the centrifugal casting machines are

Table 2.—Direct Tensile Tests on Centrifugal Iron Castings

No.	Total Carbon, Per Cent	Silicon, Per Cent	Manganese, Per Cent	Sulphur, Per Cent	Phosphorus, Per Cent	Ultimate Strength, Tons per Sq. In.	Remarks
1	3.21	2.75	0.31	0.11	0.64	17.46	Direct cupola melted
2	2.99	2.70	0.39	0.09	0.64	19.40	Metal from receiver
3	2.95	2.85	0.28	0.10	0.92	19.95	Metal from receiver
4	2.99	1.98	0.35	...	...	19.50	Determined on ring
5	3.10	2.55	0.29	...	...	19.31	Determined on ring
6	3.15	2.75	0.29	...	...	18.71	Determined on ring

included in Table 2. These figures are included with the object of giving some idea of the range of composition which can be dealt with by this process.

#### Nickel-Chrome Castings

The cast iron containing nickel and chromium is being used for the production of the chilled iron wheels previously mentioned and illustrated. The author is yet unable to give data of the physical properties of this material as centrifugally cast, and its use for this purpose has suggested itself on the basis of certain stationary chill casting experiments of which the author has had previous experience. The main object in using this material is the desirability of producing a chill having an extremely close grain, as distinct from the somewhat coarser grain of plain cast irons. The com-



position is at present being obtained by melting nickel-chrome steel scrap in the mixture.

### Physical and Mechanical Properties

The consideration of the mechanical properties of centrifugal castings should always be made in conjunction with the chemical composition, and this must be taken into consideration when making comparisons between centrifugal and sand castings. So far as the investigation of the properties of centrifugal cast iron has gone, in all cases a distinct improvement in the mechanical properties has been found. An improvement would, of course, be expected on the grounds of the use of a metal mold, although there is no doubt that the centrifugal method itself has considerable influence in modifying the properties of the cast iron.

The figures given in Table 2 are the results of tensile strength determinations on bars and rings cut from centrifugal castings of the compositions as given. These results show the influence of the reduction in total carbon content in increasing the tensile strength and the slight falling off in strength with increased silicon content. In all cases the values are slightly higher than would be obtained from sand castings of identical composition. Where the determination was made on rings, the procedure recommended in British Engineering Standards Specification, 2 K. 6, was followed, using the formula set out therein for obtaining the breaking load per square inch of section.

### Resistance to Wear

The results of some determinations of the resistance to wear determined by the use of a special machine designed by the author are given in the following table, Table 3. Both samples tested were of the same composition and from the same cast. The sand cast specimens were prepared from standard  $\frac{3}{4}$ -in. diameter

Table 3.—Results on Resistance to Wear  
CENTRIFUGALLY CAST METAL

	Grams	Loss, Grams
Original weight of specimen.....	6.7500	
Weight after 3,000,000 revolutions.....	6.7349	0.0151
Weight after 4,000,000 revolutions.....	6.7339	0.0010
Weight after 5,000,000 revolutions.....	6.7335	0.0004
Weight after 7,000,000 revolutions.....	6.7331	0.0004
Total loss .....		0.0169
SAND CAST		
	Grams	Loss, Grams
Original weight of specimen.....	6.7530	
Weight after 3,000,000 revolutions.....	6.7455	0.0075
Weight after 4,000,000 revolutions.....	6.7425	0.0030
Weight after 5,000,000 revolutions.....	6.7325	0.0100
Weight after 7,000,000 revolutions.....	6.7220	0.0105
Total loss .....		0.0310

round bars, and the centrifugal cast specimens were machined from cylindrical castings having a wall thickness of approximately  $\frac{5}{8}$  in. The tests were made under strictly comparable conditions. These figures are the only long series that the author has yet available, and are taken on a material with high silicon.

The state of our knowledge of the factors governing wear in materials is insufficient to allow of the broad conclusion that these results are characteristic of centrifugal castings, and they are included merely as the results of a long comparative test. The figures in themselves are rather remarkable, indicating as they do a greater loss in weight in the centrifugal casting of the above composition in the earlier stages of the test. The magnitude of this loss in weight in the centrifugal casting decreases as the test is prolonged, and has apparently reached a constant value, whereas in the sand casting the loss in weight increases steadily with the prolongation of the test.

[The author discusses the microstructure of centrifugal castings of iron and his conclusions agree with other articles published in THE IRON AGE. There are also a few paragraphs on pin and blowholes.]

### Novel Melting Plant

An improved melting plant has been designed and installed, to supply hot metal of regular and uniform composition for the production of castings by this process. The ordinary type foundry cupola is used, but this

has been arranged to charge direct from the ground level into the charging door by means of a bucket-type elevator. The tap hole of the cupola furnace is directly connected by a refractory lined channel to a specially designed auxiliary oil fired receiver, and the molten metal is allowed to run freely into the receiver.

The receiver consists of an inclosed shallow hearth capable of holding two or three tons of molten metal. Four oil burners of the low-pressure type, supplied with air at about 20 to 25 in. water pressure, and fuel oil from an elevated tank, are arranged as shown in Fig. 2. The air for the oil burners is arranged to pass through a series of re-heater pipes, built into a chambered space above the roof of the hearth, through which the hot waste gases from the combustion of the oil in the hearth are led. By this means a portion of the heat from the waste gases is utilized and hot air is supplied to the burners which aids the efficiency and contributes somewhat to the economy of the furnace. An inspection door is also provided on the oil-fired receiver.

No reduction has been made in the height of the coke bed of the cupola furnace in this instance for special reasons, but in the ordinary way there is no reason why the bed should not be lowered to within a few inches of the bottom of the cupola. This would, of course, effect considerable economy in the coke consumption of the cupola section of the plant.

An auxiliary tuyere has been provided on the cupola, leading air from the tuyere belt to the bottom of the bed. This has been found a considerable advantage in starting up and in maintaining the bed very hot in the earlier stages of the melting, thus preventing the choking of the outlet into the oil-fired receiver. This auxiliary tuyere is closed up after the cupola has been running for some time. An additional tap hole (not visible) and spout are attached to the cupola. This serves the dual purpose of enabling metal to be taken direct from the cupola if desired, and enables slag and metal to be drawn off from the cupola without spoiling the main tap hole leading to the receiver.

In actual operation the burners of the oil-fired receiver are lighted after the bed of the cupola has been charged. Starting from dead cold, the oil-fired receiver is heated up to a temperature high enough to receive the molten metal from the cupola in 40 to 60 min. with the full burner power. With the furnace in constant use, this initial heating period is reduced to from 20 to 30 min. During this period the cupola is being charged, after the completion of which melting is started. Immediately the cupola commences to melt and molten iron collects in the receiver, the burners are gradually closed down until, with constant running and constant demand for molten metal by the foundry the temperature can readily be maintained with one burner working at less than half its capacity. With this burner system any adjustment can be made according to the demands of the foundry, and as an example of the utility of the system we have during the initial stages repeatedly held and maintained as small a quantity as 10 cwts. of molten metal at a perfect casting temperature for periods varying from one to two hours.

The molten metal collecting in the receiver is tapped out from a tap hole provided (not shown) in small or large quantities according to the requirements of the foundry. This tap hole is provided with a hinged spout, which when dropped down releases a sheet iron cover holding up a sand breast, which can readily be knocked down for the purpose of cleaning and fettling the receiver after each day's melt. The receiver is also mounted on truck wheels, so that it can be moved from the cupola for relining or any other purpose, when the cupola can be used in the ordinary manner.

The average oil consumption including the starting-up period, varies from 5 to 8 gal. per hr. These figures have been taken over the last few months, during which the oil furnace has been working under very disadvantageous intermittent conditions. With continuous daily working a much lower consumption figure would result. The additional oil fuel cost is largely off-set by the reduced labor cost, charging, etc.

This plant enables low total carbon mixtures and steel mixtures to be produced regularly, and for high grade castings this is its primary advantage.

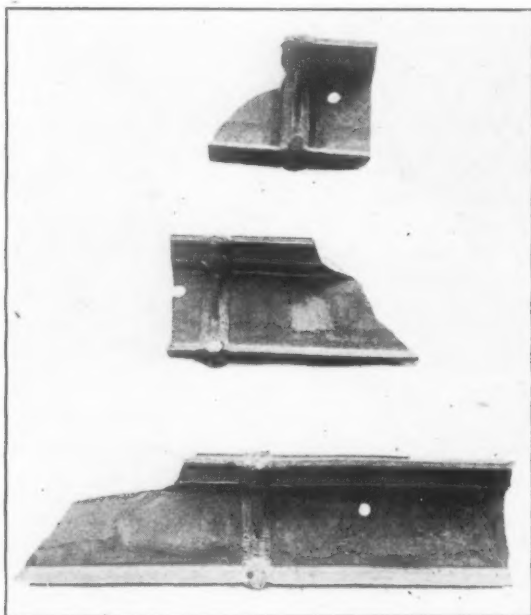
## THERMIT INSERT RAIL WELD

### Modified Collar to Reduce Cost and Increase Strength of Weld—New Mixture Developed

Savings varying from \$2 to \$3 per joint are announced as possible by the recent development by the Metal & Thermit Corporation, New York, of a modified thermit insert rail weld, wherein the usual reinforcing collar is proportioned to give a weld with considerably less thermit than was formerly believed necessary.

The modified weld, known as the center pour weld, involves no fundamental changes from the type of thermit insert weld which has been used extensively for 10 yrs. by street railroads throughout the United States. By making a great many welds and then breaking them, it was found possible to change gradually the design of the pattern to utilize the thermit steel collar in the most scientific manner and to the best advantage. A slight rearrangement has also been made in the proportions and locations of the pouring gate, heating gate and riser. A narrower gap is also used between rail ends. It has been found that an average of  $\frac{1}{2}$  in. gap will give the best results.

The saving in using the new weld consists not only in a saving of the thermit welding portions but also in the crucibles, as a smaller crucible can be used, which in turn gives several more reactions per crucible lining. An average of 25 or more reactions per crucible lining, it is stated, can be obtained.



Sections of Broken Rails Welded with the Modified Thermit Insert Collar

When used in conjunction with new style self-luting mold boxes, which require no hand luting, the operations merely require clamping the molds to the rails, preheating and pouring. The preheating takes 20 min. to  $\frac{1}{2}$  hr. per joint and the number of joints which can be welded in a day is only limited to the number that can be preheated. When two joints are preheated at a time, there should be no trouble in making 35 to 40 joints per day with a comparatively small gang.

Thermit insert rail welding operations have also been simplified by the perfection of a new thermit mixture which develops such heat that the additions can be mixed cold in it instead of being put in a can and preheated.

Under recent repeated drop tests, sections of rail welded by this method, broke entirely outside of the weld in every instance, thus demonstrating that the weld was as strong as the rail. The detailed results of some of the six drop tests reported are shown by the following data and in the accompanying illustrations:

Test No. 1: Rail section welded.—Lackawanna Steel Co. 134-506.

Nature of Test: Foundation and support of rail tested

—the rail supported on semi-elastic foundation, i. e., steel plates were laid on the dirt floor of the welding shop, on the top of which was placed a 6 in. T-rail, and the rail to be tested in turn placed upon this T-rail on 3 in. centers. Weight used: 2500 lb. Heights of drops: 20 in., 30 in., 48 in., 79 in.

Results: The last drop was as high as could be given and no deflection or breakage occurred.

Test No. 2: Rail section welded—same as in Test No. 1.

Nature of Test: Foundation and support of rail tested; foundation consisted of two 10 in. square steel billets each 3 ft. 8 in. long imbedded horizontally in the dirt floor of the welding shop. On these billets were placed 6 in. T-rail on 3 ft. center.

Weight used: 2000 lb. Height of drop: One 5 ft. drop only.

Results: Rail tested broke entirely through the rail steel adjacent to the thermit collar.

Test No. 5: Type of rail tested and nature of test similar to Test No. 2 except: Heights of drops 30 in., 48 in., 66 in.

Results: No deflection took place at the 30 in. drop. A deflection of 0.008 in. occurred at the 48-in. drop and the rail broke at the 66-in. drop. The fracture occurred 17 in. from the weld at the base and fractured diagonally up through the rail emerging through the head of  $4\frac{1}{2}$  in. from the weld, thus showing a rail and not a weld failure.

Note: In none of the Tests Nos. 1-5 inclusive, did the total length of rail after welding exceed 4 ft.

Test No. 6: Rail section welded—9 in. L. S. Co. 134-470. This section and section L. S. Co. 134-506 (used in previous tests) are almost identical; the only difference being that the 506 section has a slightly curved contour on the running surface of the head, whereas 470 is flat.

Results: No deflection occurred at the 30 in. or 48 in. drop. A deflection of 0.005 in. occurred at the 66-in. drop and the rail broke at the 104-in. drop. The break occurred through the base 8 in. from the weld and ran diagonally upward toward the weld, breaking through the head alongside of the insert and  $1\frac{1}{4}$  in. away from the weld through the lip. There was a bolt hole through the web of this rail about 2 in. away from the weld and the broken specimen shows a crack extending from this bolt hole toward and through the weld. It is possible that had this crack at the bolt hole been absent, the rail may have broken completely through the head away from the weld.

The modified insert weld was demonstrated on May 12 before the members of the committee on way matters of the American Electric Railway Association at the Jersey City plant of the Metal & Thermit Corporation. One man was able to make a mold, preheat and pour a weld in less than one hour's time.

### Steel Plant Electrical Engineers to Meet

During the week of Sept. 11 to 15 the Association of Iron and Steel Electrical Engineers will hold its sixteenth annual convention, at Cleveland Public Hall, Cleveland. A list of the eighteen papers to be read was published in *THE IRON AGE*, July 20, page 138. In addition to the technical sessions there will be an exhibit of apparatus of particular interest to steel mill engineers, covering some 30,000 sq. ft. of floor space in the same building. All of the meetings as well as the exhibits, are open to visitors.

An operating foundry exhibit is to be one of the convention features. The foundry will be equipped for making steel castings, and gray iron and alloy steel. The Pittsburgh Electric Furnace Corporation will supply a 500-lb. Lectromelt furnace.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its second annual convention Sept. 19 to 22, inclusive, at the City Hall, Huntington, W. Va. The papers announced have to do largely with the engineering problems of mining. In connection with the convention will be a coal and industrial exposition at the Chamber of Commerce Building, Huntington. Among the features will be an illustrated lecture on the manufacture of steel, using motion pictures, by William Richardson, Cambria Steel Co., Johnstown, Pa., and also a showing of films furnished by the Bureau of Mines, illustrating mining and transportation of coal. Herbert Smith, Huntington, W. Va., is secretary-treasurer of the association.



# Economic Basis of the Scrap Business\*

## Its Large Proportions—Place of the Dealer Between Producer and Consumer—Problem of Disposal of Light Scrap

BY CHARLES DREIFUS

THE United States Tariff Commission estimated that for the year 1918 the total consumption of wrought iron and steel scrap in the United States was approximately 18,000,000 tons. This is, of course, only an estimate. It is arrived at by taking the ingot production of the country, deducting the basic and Bessemer pig iron production, allowing for open hearth furnace losses and adding the scrap used by the wrought iron mills and the rerolling trade.

There are no real statistics to show exact consumption, but we may be warranted in the following estimate for 1918:

	Tons
Consumption of iron and steel scrap in open-hearth, Bessemer and electric furnaces (85 per cent of 18,000,000).....	15,500,000
Consumption in rolling mills for bushelling, puddling, piling and rerolling.....	2,500,000
Consumption of blast furnaces, 3 per cent of pig iron production.....	1,000,000
Consumption in foundries, 20 per cent of foundry pig production.....	1,000,000
	20,000,000

When we reflect that the total production of pig iron for the year 1918 was only 39,000,000 tons, we gain a new idea of the importance of scrap.

### Sources of Scrap

Of course, only a part of this vast total constitutes the scrap trade. Considering the first and most important item in our estimate, the 15,500,000 tons consumed in open hearth, Bessemer and electric furnaces, probably 10,000,000 tons are produced by the plants themselves, in the form of crops taken at various stages of manufacture, leaving perhaps 5,000,000 to be furnished from the outside. This 5,000,000 tons together with the 2,500,000 consumed by the rolling and rerolling mills, 1,000,000 consumed in blast furnaces, and 1,000,000 consumed in foundries, totals about 10,000,000 tons, which for the purpose of our discussion can be considered the volume of the scrap business. In tonnage it is about one-half as great as the United States Steel Corporation's annual production of finished product.

Where does all of this scrap come from? The most important source of supply is the manufacturing plant. Every manufacturing plant that buys iron or steel produces scrap iron or steel. It is estimated that 40 per cent of all iron and steel scrap comes from this source. Production covers every grade, from billet and bloom crops, down to machine shop turnings.

In point of tonnage, scrap yards are the next largest source of supply, with about 35 per cent of the total. Most of the scrap produced by the yards is received from railroads or industrial plants in the form of unsorted or unsorted material that must undergo manipulation before it is in shape to be handled by consumers.

The third source of supply is the railroads, with about 25 per cent of the total.

Thus from industrial plants comes 40 per cent of the scrap; from scrap yards, 35 per cent and from railroads, 25 per cent.

### The Work of the Scrap Dealer

The dealer sorts into commercial grades, miscellaneous scrap that is not in a form suitable for consumption. Let us assume a small industrial town, with a few small manufacturing plants. During the course of, say, a month, one plant produces: 2 tons of bar

ends; 3 tons of steel turnings; 2 tons of cast iron borings; 300 lb. of burnt cast iron; 800 lb. defective castings.

Four or five months would be required to gather together enough to make a mixed carload, but of course no consumer could use such a mixture. Many months would be required to accumulate a car of steel, a car of borings, a car of turnings and because of the time required, some of the material would deteriorate unless protected.

In such a community the scrap dealer acts as an assembling station. He hauls the monthly accumulations of each plant to his yard, and is thus enabled to ship a car of steel per month, and a car of turnings in two months, a car of borings in three months, and so on. In addition to his function as a sorter and assembler, he shears, or breaks scrap material, which the producers are not equipped to prepare. The relationship above described applies to thousands of small manufacturing plants and hundreds of small dealers scattered all over the country.

A step higher, in point of tonnage, are the manufacturing plants who produce scrap in carload lots. In some cases, these producers sell direct to consumers, but in most cases they sell to dealers, who in turn sell to consumers. In such transactions the dealer functions again as an assembler, for, while the scrap is produced only in lots of one or two carloads, it must be sold to the consumer, because of demand, in lots of hundreds or thousands of tons. But the dealers' service to the producer in such cases goes further. The dealer is in daily touch with consuming markets and knows just where to place each grade to the best advantage. The directing head of the producing plant has no time to keep in touch with a number of markets for a multiplicity of grades. Indeed, for the small amount that he produces, it would be an economic loss to spend so much of his time or of the time of a subordinate doing something that the dealer does as part of his regular daily work.

In effect then, the dealer acts as sales agent for the producer. Competition among dealers is so keen that the producer is usually assured of the highest offers that the market affords.

Mention has been made of the fact that material is usually bought in large tonnages because of demand. A steel plant whose requirements for outside scrap totals 25,000 tons per month, purchases the entire amount from a few dealers. These dealers ship part of the order from their own yards, and then operate as purchasing agents for the consumer, seeking scrap from producers and other dealers, and completing the chain that extends back to the small producer.

Were the consuming plant to attempt to take care of its consumption with its own force of buyers, it would undoubtedly be found that the cost of gathering would exceed the dealers cost plus profit. In the first place, the mills' purchasing force must of necessity be large enough to take care of maximum demand, and would be idle during slack times. The dealers' organization, on the other hand, is flexible. When one market is dull, it concentrates on another. The purchasing force of the industrial consumer would learn also that it fails to render the proper service to the producer. Few consumers buy more than a half dozen grades. Scrap is produced in fifty or sixty grades. The dealers' organization handles all grades for the producer. The dealer also has a broader knowledge of all markets than the consumer could hope to gain. In a time of active demand, consumers, who are in reality competing against one another, must be reluctant to

\*From an address before the National Association of Sheet and Tin Plate Manufacturers; Mr. Dreifus is president of Charles Dreifus Co., Pittsburgh.

give one another full information as to their respective markets. But such information is readily available to the dealers, through actual negotiations or transactions.

#### Storage Function of Scrap Dealer Activity

During periods of depression, after all consumers have filled their scrap storage space, the dealer continues to buy, prepare and store. This demand by the dealer keeps up to any extent the market for the producer. The scrap stored finds its way to market when demand is active and prices higher, filling needs that could not be met by current production.

In going into these details of the scrap dealers' place in the commercial world, there has been no thought of holding a brief for him, but merely to ex-

plain why he is in business. If he did not fill an economic want, he would not be in business.

We must not close our eyes to the fact that scrap as produced is not all No. 1 heavy melting steel scrap,  $\frac{1}{4}$  in. thick and heavier. There is a huge production of lighter and therefore less desirable grades for which an outlet must be provided.

Better preparation may make this scrap available for open hearth use, or the experience now being gained as a result of the present coke and pig iron shortage may prove that the blast furnace is the most practical outlet. It is certain that for economic reasons a continuing demand for these lighter grades must be stimulated, and a determined effort made to study the best methods to use them.

## AMOUNT OF GASES IN STEEL

### Results of Some New German Methods of Analysis on Basic Bessemer Metal

THE question of the kind and amount of gases contained in steel has always been of great interest, because of the possible large effect of these on the soundness, strength, and other properties of the steel. An important paper was published in *Stahl und Eisen*, May 25 by Oberhoffer and Piwowsky of the Universities of Aachen and Breslau on their methods of investigation, and some very interesting results given.

Oberhoffer and his students had previously worked out an improved method of melting samples of steel in a vacuum, and measuring and analyzing the gases evolved, which is one method of attacking this problem. It is believed this method is liable to error, due to oxides in the steel reacting with the carbon and giving wrong values for CO and CO<sub>2</sub>. Also the hydrogen in the steel may react with these metallic oxides to form water, which is absorbed by the P<sub>2</sub>O<sub>5</sub> of the pump train of bulbs. A method was worked out of dissolving the steel drillings in mercuric chloride solution, the iron being changed to chloride and the gases set free. A detailed description of the apparatus used and the method is given in the original paper.

The first tests were carried out on a basic Bessemer low carbon steel, before and after de-oxidation. Results on the metal before de-oxidation by melting in a vacuum and also by solution in the cold by mercuric chloride, are given below as an average of 10 determinations. The amount of gas is cubic centimeters, at 0 deg. Cent. and 760 mm. pressure, per 100 grams metal. In regard to gas analysis the CO<sub>2</sub>, CO, and H<sub>2</sub> were carefully determined and the nitrogen constituted the balance. The initials H.E. signify hot extraction, and K.U. the cold solution methods:

GASES IN BASIC BESSEMER STEEL					
Before Deoxidation					
Method	Total Gas, Cu. Cm.	CO <sub>2</sub> , Per Cent	CO, Per Cent	H <sub>2</sub> , Per Cent	N <sub>2</sub> , Per Cent
H.E. ....	40.99	12.10	60.50	21.81	5.59
K.U. ....	9.23	18.75	16.25	44.98	20.02
After Deoxidation					
H.E. ....	102.96	9.00	62.75	22.05	6.20
K.U. ....	9.64	9.76	13.18	41.90	35.16

Results on a commercial soft steel containing carbon 0.15, manganese, 0.45, phosphorus, 0.025, and sulphur, 0.026 per cent, were as follows:

Method	Total Gas, Cu. Cm.	CO <sub>2</sub> , Per Cent	CO, Per Cent	H <sub>2</sub> , Per Cent	N <sub>2</sub> , Per Cent
H.E. ....	118.93	1.9	75.3	19.9	3.4
K.U. ....	35.80	14.8	23.7	52.5	9.0

A comparison of results by the two methods shows first that the total amount of gas obtained by cold solution is only about 25 to 30 per cent of that found by the hot extraction method. This is understandable in regard to CO and CO<sub>2</sub>, but it is noticeable that hydrogen also shows a marked decrease. This may be due to reaction between nascent hydrogen and the mercuric chloride with formation of free hydrochloric acid. A comparison of the results on the basic Bessemer steel before and after de-oxidation is very interesting. Further experiments were carried out on the 0.15 per

cent carbon steel by both the methods mentioned above, and also by dissolving in cold bromine water so as to obviate the hydrogen reaction. The results were:

Method	Total Gas, Cu. Cm.	CO <sub>2</sub> , Per Cent	CO, Per Cent	H <sub>2</sub> , Per Cent
H.E. ....	114.8	2.0	77.83	20.17
K.U. ....	32.6	16.3	26.09	57.61
K.U. (bromine) ....	56.36	10.1	16.4	73.5

Tests were also carried out on an open-hearth steel of about 0.50 per cent carbon, before and after de-oxidation, with the following results, the method being solution in cold bromine water:

Sample	Total Gas, Cu. Cm.	CO <sub>2</sub> , Per Cent	CO, Per Cent	H <sub>2</sub> , Per Cent
Before deoxidation ..	31.7	14.44	16.27	71.03
After deoxidation ...	40.5	7.15	10.60	82.25

G. B. W.

### Proposed Aid for War Plants

WASHINGTON, Aug. 29.—Presentation of a report by Brigadier-General Williams, Chief of Ordnance, War Department, is being awaited by Secretary of War Weeks, before acting upon the proposal suggested to him recently by President Samuel Vauclain of the Baldwin Locomotive Works, that Government aid be given to industrial establishments created during the war to furnish munitions and other materials. Secretary Weeks told Mr. Vauclain that the question of aiding these plants was largely a matter of dollars and cents and would require Congressional authorization before the policy could be made effective. The Secretary did not commit himself one way or the other, but said that the proposal would be studied after the report of General Williams has been submitted. Mr. Vauclain is said to have told the Secretary that there are numerous plants created during the war whose maintenance in idleness during peace times represented a heavy cost to the owners who do not wish them destroyed, because of the high cost of building during war and the saving that would be effected and the immediate aid given to the Government in case of future emergencies. Secretary Weeks said that Mr. Vauclain did not ask help for the Baldwin company, but for another industrial enterprise with which he is associated as director. The Secretary stated that the Chief of Ordnance has been instructed to make an investigation of all large war plants which cannot be used during time of peace.

### Metal Containers for Bolts and Nuts

Sheet iron containers for nuts, bolts and rivets are preferred by Chilean importers, according to the Department of Commerce. They do not want shipments to come in wooden casks that break in handling. Europeans use the sheet iron containers and get the orders. One European firm recently got an order for 15 tons of rivets by cable because American concerns are disregarding instructions to ship in double bags of heavy material which, while not as good as sheet iron kegs, are vastly better than wooden containers. On one shipment 80 per cent of the wooden kegs burst when they were let over the ship's side into lighters, the contents were scattered over the floor and had to be shoveled into bags and later sorted out by hand.



## BENCH MEASURING MACHINE

### Micrometer Accurate to One Ten-Thousandth of an Inch—Construction and Operation Outlined

A new bench measuring machine called the Super-micrometer which will give accurate measurements to the nearest ten-thousandth of an inch has been brought out by the Pratt & Whitney Co., Hartford.

The new machine is intended to cover the intermediate field between the ordinary micrometer measuring thousandths and the company's standard measuring machine, which subdivides ten-thousandths. It is rugged, simple and relatively inexpensive and is for use on the inspectors or toolmaker's bench by any workman of average skill.

The component parts, may be noted from the illustrations, the machine being made up of a rigid cylin-

drical bed, a dividing head and an adjustable footstock, the two latter parts carrying measuring anvils. The machine has a range of 8 in. between the anvils and 3 1/4 in. between anvils and table. It has three point support on the bench. The bed and the supports up to the measuring anvils are unusually rigid and give a firm, definite touch at the instant of contact with the work. Measurements can be repeated within close limits by the sense of touch alone.

The setting of the machine is obtained by the use of standard inch blocks which are machine-lapped by a modification of the Hoke process and are accurate within five millionths of an inch. One of these blocks and its case is shown in the insert. The screw has a working range of 1/2 in. indicated by graduations on a forged Duralumin index wheel and on the measuring spindle. Means are provided to compensate for wear or any slight error in lead, while springs take up back lash and keep a constant pressure on the thrust bearing.

A square bar with a channel in one side is provided to hold the standard inches in place during the set-up or to serve as a work rest. This bar passes through the footstock and is mounted on a pin under the measuring spindle as shown in the illustration. It is conveniently stored in a hole in the bed when not in use.

The footstock is moved into position along the bed by a rack and pinion and may be clamped securely in place. Two tables are provided to clamp to the bed for supporting large work. The zero arm, held by friction, is adjustable to position and the knurled knob provides for fine adjustment of the zero line.

The index wheel has 500 divisions, 1/32 wide, each representing a spindle movement of 0.0001 in. These divisions are numbered at thousandths and are direct reading. The index wheel is revolved by a fine round belt, the slipping of which permits the operator to apply the same pressure each time to the measuring

anvils. Variations in belt tension are said to not affect the accuracy of the readings, as the same pressure is applied when setting up to zero as when measuring the work.

The knurled handwheel has two diameters, the smaller for quickly spinning the spindle up to the work and the larger for the final slow movement to the point at which the belt slips. The spindle graduations are 0.050 in. apart, with etched figures at each 0.100 in.

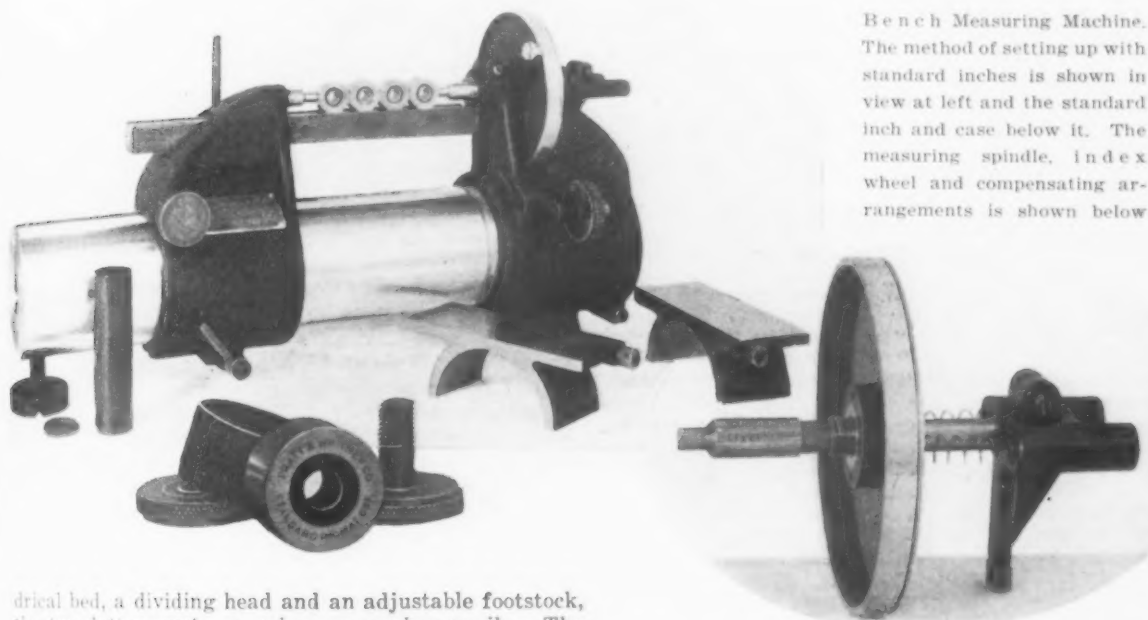
### Car Movement in Strike Times

The Matthew Addy Co., Cincinnati, under date Aug. 26, says of the strike situation:

"Week by week the effects of the coal and railroad strikes become cumulative—and this week there has been a frantic effort to keep plants going. It is not so much a question of the supply of raw materials, although these are very short, as it is a question of trans-

#### Bench Measuring Machine.

The method of setting up with standard inches is shown in view at left and the standard inch and case below it. The measuring spindle, index wheel and compensating arrangements is shown below



drical bed, a dividing head and an adjustable footstock, the two latter parts carrying measuring anvils. The machine has a range of 8 in. between the anvils and 3 1/4 in. between anvils and table. It has three point support on the bench. The bed and the supports up to the measuring anvils are unusually rigid and give a firm, definite touch at the instant of contact with the work. Measurements can be repeated within close limits by the sense of touch alone.

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portation. Things have been growing worse. The movement of freight is slow and the volume is small—and this is particularly true of the great trunk lines south of the Ohio River. They are jammed with loaded freight cars from beginning to end. Before the railroad strike, the L. & N. moved north in one day 1800 cars across its bridge into Cincinnati; yesterday it moved 800 cars, yet as illustrating the enormous expansion in business recently, the L. & N. before the war did not move to exceed 600 cars daily over the bridge. And the Southern's figures are in the same ratio. The C. & O. bridge had a movement before the strike of 4000 cars daily; yesterday it had 2400 cars—yet before the war it did not have to exceed 2000 cars daily—and even with strike conditions the movement of freight across the bridges is much greater now—more than double—than it was at this same time last year. So in spite of all the present difficulties business is being done on a large scale, but not in the volume that the needs of the country demand."

The Western Iron Stores Co., Milwaukee, Wis., dealer in machinists', mill and factory supplies, will add a line of machine tools to the products which it carries. The company has already been appointed representative for the Hoyer line of drilling machines, group drilling heads and drills.

In the reported negotiations over scrap supplies in South America, but at large amounts, the Hyman-Michaels Co., Chicago, is not interested, and Joseph Michaels, vice-president and treasurer of the company, says that it is not likely to be.

## TO DISCUSS MANAGEMENT

### Local Sections of Engineering Societies Plan Special Meetings for One Week—Topics of Practical Interest

The direction of labor so as to utilize constructive human abilities to the greatest extent is recognized as a fundamental function of management and the special meetings for management week, being planned by various local sections of the American Society of Mechanical Engineers and other societies, are expected in the relating of actual experiences to bring out facts of value to students of this subject.

Suggested topics for discussion include the following:

In what way does the management problem on a market of rising prices and activity differ from the management problem on a market of falling prices and inactivity? How is this difference being met by local business houses?

How is the manager using periodical statistics of production of basic commodities in shaping his own production policy?

Will profits average higher in the long run if reserves are established during periods of activity to carry operations at a loss during times of depression?

Where are the concrete illustrations of the reductions in cost of producing and of selling that have resulted from refinement of management methods? Do such refinements pay?

Will the period of intense competition ahead force industry to more thorough standardization of product, materials, equipment and processes? Will this benefit the worker as well as the investor?

Is it practical to make master plans for operations a year or eighteen months ahead? How and where has it been done?

Given a seasonal consumption of product, how do you determine when it pays to stabilize production by storing finished product made in dull season for sale during the season of active consumption?

Can participation in management by the worker ever be practical without his equal participation in responsibility? Can the former precede the latter?

Is the cost of living a practical basis for fixing wages under a condition of free competition for the product?

How can you measure definitely a man's ability as a

manager? Is past performance a safe guide under new conditions?

How is the engineer helping the salesman?

The compilation in a special volume of the papers and discussions of management week is under consideration, and it is expected that every section will be represented.

Several sections have formulated plans. The relation of labor to national progress will be the topic about which discussion will center in the management week meeting of the New Haven branch of the Connecticut section of the American Society of Mechanical Engineers, to be held Oct. 16. It is expected that the subject will be treated not only in the broad sense indicated but also will be illuminated by discussions of concrete experiences of the local engineers and managers. The meeting will be under the direction of H. R. Westcott, president, Westcott & Mapes, Inc., New Haven, assisted by Prof. H. L. Seward, Yale University, and N. E. Horn, Winchester Arms Co.

The Metropolitan section will combine with the local sections of the Society of Industrial Engineers and the Taylor Society, the date of the meeting being Oct. 17. It is planned to invite the local representatives of manufacturing and financial interests to participate in the discussion of changes in management methods essential in the changing economic situation. A joint committee of six will be in charge of the meeting, the chairman being W. H. Leffingwell, president, Leffingwell-Ream Co., industrial engineers, New York.

New Orleans will hold its management week meeting in co-operation with the Louisiana Engineering Society. The leading paper will be on management of a ship-repair plant, to be presented by Orloff Henry.

The topic of Boston's management week meeting, which will be held Oct. 17, has not yet been decided. The Waterbury branch has also planned a meeting, the topic to be announced later. The meeting planned by the Hartford section will be in the hands of A. W. Honeywill, chairman of the local program committee.

A joint meeting with the Technology Club of Syracuse and local members of other national societies is planned by the Syracuse section.

### Meeting of Lake Superior Mining Institute

The twenty-second annual meeting of the Lake Superior Mining Institute was held in the Michigan copper country the first three days of this week. Headquarters were at Houghton and a number of trips were taken. The Michigan College of Mines was visited Wednesday morning. The following papers were presented at the sessions on Monday and Tuesday evening:

"Co-operative Effort in the Study of Mining Methods," with an outline for papers on mining methods, compiled by the Mining Methods Committee of the American Institute of Mining and Metallurgical Engineers—Charles F. Jackson, secretary, Cleveland.

"Why We Need a Classification of Methods of Mining"—F. W. Sperr, Michigan College of Mines, Houghton, Mich.

"Calumet & Hecla Reclamation Plant"—C. Harry Benedict, Calumet, Mich.

"Handling Underground Waste Rock Through Underground Skip Dump, Quincy Mining Co."—T. C. DeSollar, Hancock, Mich.

"Recent Practice in the Use of Scrapers on Sub-Levels"—Lucien Eaton, superintendent Cleveland-Cliffs Iron Co., Ishpeming, Mich.

"Compound Steam Hoist Installation of the Quincy Mining Co."—Ray W. Armstrong, Hancock, Mich.

"Faulting on the Gogebic Range"—William O. Hotchkiss, State geologist of Wisconsin.

"Geology of the Eastern Menominee Range"—Major L. P. Barrett, mining geologist of Michigan.

"Pumping in East Vulcan Mine"—Frank H. Armstrong, Vulcan, Mich.

### British Engineering Institutions Co-operating

It is announced that proposals for closer co-operation among the leading engineering institutions, which have recently been under consideration, have now received the approval of the Institution of Civil Engineers, Institution of Mechanical Engineers, Institution

of Naval Architects and Institution of Electrical Engineers, and that an engineering joint council composed of representatives of these bodies has been formed.

The objects of the joint council will be, among others, to improve the status of engineers, to secure the better utilization of their services in the company's interests and the appointment of properly qualified individuals to responsible engineering positions, and to prevent unnecessary duplication of activities. At a later stage the number of bodies represented on the joint council may be increased.

## COMING MEETINGS

### September

**American Engineering Council.** Sept. 8 and 9. Executive board meeting, Boston. Report on three-shift day in industry. Secretary, L. W. Wallace, 719 Fifteenth Street, N. W., Washington.

**Association of Iron and Steel Electrical Engineers.** Sept. 11 to 15, inclusive. Annual convention, New Auditorium, Cleveland. Secretary, J. F. Kelly, 513 Empire Building, Pittsburgh.

**National Exhibition of Chemical Industries.** Sept. 11 to 16. Grand Central Palace, New York.

**American Electrochemical Society.** Sept. 21, 22 and 23. Fall meeting, Windsor Hotel, Montreal, Canada. Secretary, Dr. Colin G. Fink, Columbia University, New York.

**American Institute of Mining and Metallurgical Engineers.** Sept. 25 to 29. Pacific Coast meeting, Engineers' Club, San Francisco. Secretary, F. F. Sharpless, 29 West Thirty-ninth Street, New York.



# Regeneratively Fired Heating Furnaces\*

## Conditions Necessary for Freeing the Hearth of Waste Gases—Good and Bad Examples— Krupp Not Infallible

BY W.-E. GROUME-GRJIMAILO

FURNACES of the Siemens or open-hearth type are symmetrical and the flues and ports through which the gas and air pass to the heating chamber serve also for the removal of the products of combustion. When regenerative heating furnaces are built, the head construction of the open-hearth melting furnace is frequently copied, although there is no necessity for such construction, and it is undesirable, when the difference in the purpose for which the heating furnace is employed is considered.

Nevertheless, this difference is a most essential factor in their design:

I.—The temperature to which the ingots are to be reheated for rolling or forging does not exceed 1300

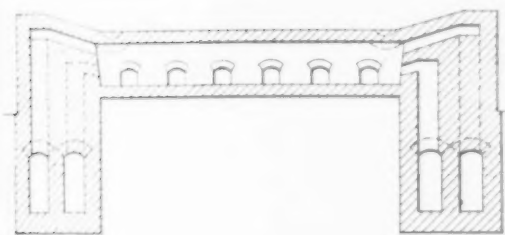


Fig. 1. Regenerative Heating Furnace with Roof Like an Open-Hearth Furnace. The dotted lines at ends show how the roof was there lowered to get better and more uniform heating

deg. Cent. (2372 deg. Fahr.) and, for this reason, the jet of flame from the ports must not impinge upon the material being heated. In the open-hearth furnace this restriction does not exist and, on the contrary, it is desirable that the jet of flame should impinge upon the surface of the bath.

II.—The surface of the bath in the open-hearth melting furnace boils, which causes an elevation of the surface occasionally of from 20 to 24 in. (500 to 600 mm.). The surface of the hearth of the heating furnace is solid, except for the thin layer of melted cinder which slightly wets the surface. For this reason, in the open-hearth furnace it is absolutely necessary that the bridge or port sills should be at a level higher than the surface of the bath during the boil. But there is no reason that the ports of the heating surface should be higher than the hearth.

Actually, if the port sill or bridge of a reheating furnace is raised above the hearth level a height equal to the thickness of the ingots to be heated, as is ordinarily done, it becomes completely impossible to get rid of the layer of stagnant colder gases which lies upon the hearth and in which the material being heated is placed. It is evident that the heating of the material would be much better accomplished if this layer of colder gases were drained away from the hearth. To accomplish this result, the bridge wall or port sill should coincide with the hearth level.

Fig. 1 shows the longitudinal section of a curious regenerative fired furnace. The length of the hearth is 26 ft. 4 in. (8020 mm.); the roof is 3 ft. 3 3/4 in. (1 meter) above the hearth and the width is 6 ft. 6 3/4 in. (2 meters). The heads are of the type usually used on melting furnaces. Originally the roof of the furnace was straight from end to end. Later it was lowered, in

the neighborhood of the heads to 2 ft. 3 in. (680 mm.) above the hearth.

It is evident that, with a hearth 26 ft. 4 in. long, the hot gases from the flame did not touch the hearth of the furnace, and did not heat the material (ingots) near the waste gas outlet. This is the same phenomenon which occurs in the open-hearth melting furnace when, by reason of the complete absorption of the live force of the jet of flame, it rises to the roof and the thickness of the layer of hot gases becomes normal for its rate of flow, as may be computed by the formula of Yesmann. At the corner, close to the waste gas port, a pocket of colder gases will be formed, and the bath will tend to freeze. In the Goujon works, at Moscow, a case of this kind occurred, with a furnace 46 ft. (14 meters) long, and to correct this it was necessary to install two burners for oil, one in back of the other.

In the case under consideration, a different procedure was followed: that of dropping the roof of the furnace, close to the heads, to the height required for the inverted weir, forcing, in this manner, the stream of burning gases to lick the hearth, not only where it issued from the ports but also farther on. This is illustrated by dotted lines in Fig. 1. While estimating at its true value this method of reconstruction for the type of head universally in use, it is believed that much better results can be obtained in another way.

*Note by translator:* Glass pot furnaces are a good example of this defective form of construction. Correct construction would undoubtedly eliminate a great many of the melting troubles experienced in the glass industry, as well as reduce the percentage of pot failures.

Figs. 2 and 3 are sketches of two forms of construction which may be employed for these cases. These two methods are based upon the following considerations:

The chilled gases are drawn off at the level of the hearth of the reheating furnace; this manner of getting

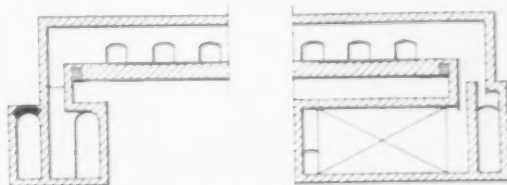


Fig. 2 (Left) and Fig. 3 Show Better Methods of Building Regenerative Heating Furnace Ends Than Given in Fig. 1

rid of the waste gases results in the active and regular action of the hot gases upon the material being heated, and favors their rapid and uniform reheating;

The producer gas, and the preheated air entering the heating chamber, do so at a very low velocity, to the end that combustion takes place throughout the entire heating chamber and the points of sharp combustion close to the ports, which occur in a jet of flame, are eliminated. When the gas and the air are preheated nearly to the temperature of the jet flame, which may be 1500 to 1600 deg. Cent. (2732 to 2912 deg. Fahr.) the material being heated will be burnt if exposed to the impinging action of a jet. This assumes that the producer gas and the air are mixed outside the heating chamber of the furnace.

To prevent the melted cinder from flowing into the ports of the furnace, the hearth is given a slight drain-

\*From "The Flow of Gases in Furnaces," to be published by Wiley & Co. translated and copyrighted by A. D. Williams, P. O. Box 92, Newark, N. J.

age slope from both ends toward the center. The port sills or bridges are, moreover, cooled by inverted troughs of iron below them, through which a forced circulation of cold air is maintained by means of an aspirating chimney.

An extremely interesting example may be cited, from the point of view that the fundamental principles of rational furnace construction were completely neglected: This is a regenerative fired furnace for the carbonizing and tempering of armor plate according to the Krupp system.\* This furnace is distinguished by the backward state which it shows in furnace construction.

According to Fig. 4, it may be seen that the vertical heads of the furnace are elevated 31.5 in. (800 mm.) above the hearth. The armor plate to be heated was

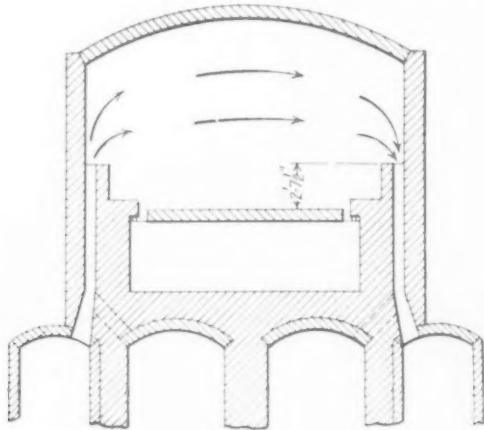


Fig. 4. An Armor-Plate Heating Furnace Which Was Not a Success

to be placed upon a car and supported above its deck by a short brick column, and then run into the furnace. It was found, nevertheless, to be within a pocket of colder gases, which could not be drained away from the armor plate. Moreover, the furnace was intended to work with a negative pressure in the heating chamber, with the result that the reheating of the plate had to be accomplished while it was surrounded with currents of colder air drawn into the furnace. The results of such a method of working are clearly apparent.

It had been planned to carbonize and heat two armor plates at a time, placing one above the other and separating them with a layer of charcoal. It may be stated that the lower plate was carbonized much more slowly than the upper; and it was necessary to abandon the idea of carbonizing two plates at a time. Actually, these plates were carbonized one by one, and double the number of furnaces were required with twice the expense of operation. Moreover, the Russian works were so thoroughly impressed by the reputation of the Krupp company that they would not consent to the cutting down of these heads to the level of the hearth of the furnace.

\*This refers to the Russian works using the Krupp system.

### Emergency Fuel

WASHINGTON, Aug. 29.—As an emergency fuel, a mixture of fuel oil with fine coal in as large proportions as the coal will absorb and hold is suggested by the United States Bureau of Mines to steam coal users and gas manufacturers to augment their fuel supply during the present shortage.

Slack coal that has a high percentage through an 8-mesh screen, or which may be crushed to sizes of  $\frac{1}{8}$ -in. or less, will take up in oil from 30 to 40 per cent of its own weight and make a fuel high in calorific value. Coarse slack coal, however, as judged by a representative sample from the Pittsburgh market, will absorb oil to only 3 to 10 per cent of its own weight, which would give a fuel having only about 4 to 15 per cent increased heating value. The finer the size of the coal, therefore, the larger is the amount of oil which will be held. Tests made by the Bureau of Mines at Pittsburgh indicate that the mixture can be made with either bituminous slack or anthracite culm.

## ROEBLING INSURANCE PLAN

### Protection Given to 6,000 Families—Pension System Also Established

The John A. Roebling's Sons Co., Trenton, N. J., announces that all employees who have been with the company a year or longer, on Sept. 1, 1922, will be protected by group life insurance and pension plans. The insurance will go into force automatically at midnight of Aug. 31. The insurance is graded according to length of service, all employees more than one year and less than two years with the company to receive \$500, increasing \$100 for each additional year of service until the maximum of \$1,500 is reached for 11 years and over. The insurance benefits will be payable to the beneficiary named by the employee, or, in the event of his becoming totally and permanently disabled before reaching age 60, it will be paid to him.

The pension plan contemplates retirement at 60 for men and at 55 for women, and in the event of 20 years' service or more, such an employee may request a pension or be retired at the discretion of the company. Any employee, however, who has served 30 years or more, or any male employee 55 years of age or female employee 50 years of age whose term of service is 25 years or more, may at the discretion of the company be retired from active service and granted a pension.

The plan also provides that pensions may be allowed in cases of total disability arising from non-occupational injuries and illnesses, provided the employee has served 15 years or more.

The amount of pension is determined by multiplying one per cent of the average annual pay during the ten years preceding retirement by each year of service. A minimum of \$25 per month and a maximum of \$250 a month has been established and will apply, except where the pension is being paid in cases of total disability above referred to, in which the minimum may be less than \$25 per month.

### Professor Stumpf Entertained

Prof. Johann Stumpf, Berlin, Germany, inventor of the Unaflo engine, who is making a tour of the United States, was the guest of Manager Neil C. Lamont, Laidlaw Works of the Worthington Pump & Machinery Corporation, Cincinnati, on Aug. 22. Mr. Lamont had invited the members of the American Society of Mechanical Engineers, Cincinnati branch, to meet at the plant for the purpose of inspecting the latest type of engines and compressors, and also to hear Professor Stumpf deliver an address on the latest developments in the Unaflo engine. Following an inspection of the shops and a number of engines in operation, dinner was served in the dining room at the plant, at which, in addition to the visiting engineers, officials and shop foremen of the company were present.

Professor Stumpf delivered an exceedingly interesting address, illustrated by lantern slides, paying particular attention to the results obtained in Unaflo locomotives now in operation on German and Russian railroads. Within the next few months Professor Stumpf expects to introduce the Unaflo principle into the automobile field in a new type of steam car.

Figures made public by the Pennsylvania Railroad indicate that a probable total of 137,250 tons of steel rails will be laid by that system this year, compared with a total of 149,765 tons in 1921. This estimate is based on figures for the first seven months of the current year, which show a total of 82,250 tons already laid down. Pennsylvania's commitments in the way of new rails have reached a total of 80,000 tons for 1922. With a carryover of 74,000 tons of rails from last year, the total available for replacements becomes about 154,000 tons.

The Maine Central Railroad's Portland, Me., machine repair shop, air brake repair shop and other property were burned Sunday, Aug. 13, the approximate loss being \$1,000,000. The shops will be rebuilt as quickly as possible.

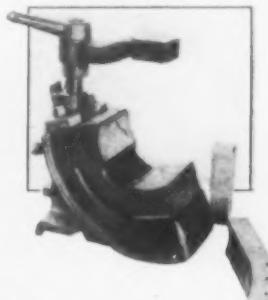
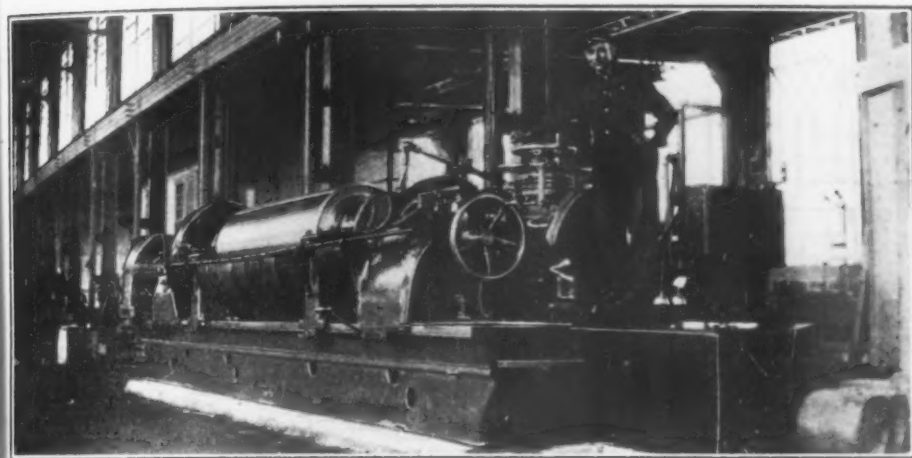


### New Machine for Grinding Mill Rolls

A heavy-duty roll-grinding machine for finishing all types of hot and cold mill rolls is being offered by the Landis Tool Co., Waynesboro, Pa. The general construction may be noted from the accompanying illustration which shows the 40 x 168 in. machine in use at one of the plants of the Aluminum Co. of America finishing a 16,000 lb. roll.

The machine is driven by three motors and is entirely self contained. It is stated that under actual operating conditions the machine has removed 7 cu. in. per min. of chilled iron, accuracy and sensitiveness being maintained throughout. The standard sizes available are 20, 30 and 40 in. and in lengths to suit requirements.

The work is driven by a motor which is mounted on the bed of the machine and connected directly to the headstock. A motor mounted on a carriage and travel-



New Roll Grinding Machine. The operator's platform is on the grinding wheel carriage. The two-bearing type of roll head is shown above.

ing on a track at the back of the machine is used for driving the grinding wheel, and a small motor is provided to drive the water pump. The motors are controlled by push buttons on the operator's platform.

To permit the operator a clear view of the wheel and work at the point of contact, the operator's platform is mounted on the grinding wheel carriage. The carriage-traverse and reversing mechanism is embodied in one unit which is mounted on the grinding-wheel carriage within convenient reach of the operator. Gears are of chrome-nickel steel and run in oil. For smooth operation, the main drive on the grinding-wheel carriage is through a worm and rack, and provision has been made for a tarry at the point of reversal. Power movement on the grinding wheel base permits rapid moving of the wheel toward and away from the work.

A special feature is the attachment provided for grinding the face of the roll either concave, convex or straight as desired. The amount of crown or concavity is obtained by a simple system of gearing at the back of the machine and can easily be determined by a chart provided for the purpose. The gearing is engaged or disengaged by means of a lever on the operator's platform.

The roll supports are of the two bearing type which permits grinding the journal without changing the position of the roll, thereby getting the body of the roll and the journal concentric, which is essential, particularly on rolls used in the cold rolling of thin metal to close limits. The bearing block in the roll supports are made adjustable to accommodate journals of varying diameters.

Leather belting sales are reported by the Leather Belting Exchange, Forrest Building, Philadelphia, as having amounted for July to \$779,951. This compares with \$721,037 for June and \$548,290 for July, 1921. The reports represent about 60 per cent of the total product of the industry. The increase over June is 8.2 per cent; over July, last year, 42.2 per cent.

### Fewer Metal Workers and Lower Wages

Iron and steel plants, according to figures of the Bureau of Labor Statistics, show for July a loss from June of 1316 employees in 108 establishments. This loss of 0.9 per cent was accompanied by a loss of 11.8 per cent in amount of payroll and a corresponding reduction in the average pay envelope from \$46.78 to \$41.67, or 10.9 per cent.

In the automobile industry there was a gain in 40 establishments of 1.6 per cent in number of employees, but a reduction of 1.1 per cent in payroll total. In car building and repairing there was a loss of only 7.8 per cent in number of employees in 54 establishments, in spite of the strike, and a loss of 40.1 per cent in amount of payroll.

Compared with a year ago, there has been a gain, all told, of 32.2 per cent in number of men employed, and a gain of 22.9 per cent in total payroll. This con-

notes a loss of 7 per cent in contents of the average pay envelope.

Wages per half-month per man in automobile plants, which are exceptionally busy, are 63 per cent over those prevailing in steel plants. Details are shown in the table.

Period	Number of Establishments	Number of Men	Half-Month Payroll	Average Pay Envelope
<i>Iron and Steel</i>				
June, 1922.....	108	142,652	\$6,673,450	\$46.78
July, 1922.....	108	141,336	5,889,278	41.67
July, 1921.....	110	98,537	3,772,352	38.29
<i>Automobiles*</i>				
June, 1922.....	40	104,889	7,377,743	70.34
July, 1922.....	40	106,619	7,243,249	67.95
July, 1921.....	42	89,714	6,280,330	70.00
<i>Car Building and Repairing</i>				
June, 1922.....	54	51,699	3,071,000	59.39
July, 1922.....	54	47,661	1,838,207	38.57
July, 1921.....	56	40,067	2,351,014	58.68
<i>Metal Workers (the three groups above)</i>				
June, 1922.....	202	299,250	17,122,193	57.21
July, 1922.....	202	295,616	14,970,734	50.64
July, 1921.....	208	228,318	12,403,696	54.33

\*Payroll figures are reported as "weekly"; they have been made "half-monthly" by multiplying by 2 1/6.

### Canada's Iron and Steel Output in July

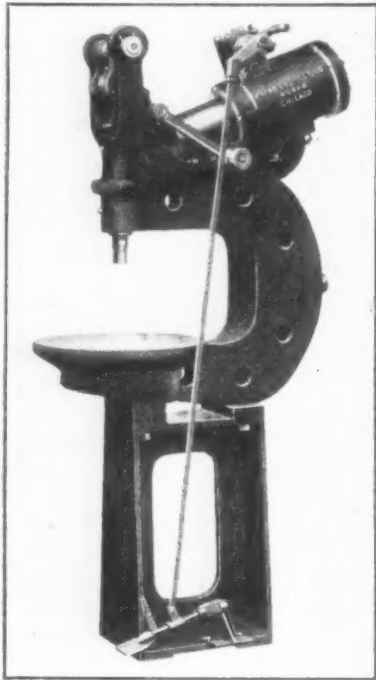
The production of pig iron in Canada during July presented an increase of 10.2 per cent over the record for June. The output during July was 31,705 tons as compared with 28,763 tons in June. The production of steel during July showed a surprising advance. The output in June was 32,805 tons while in July the production amounted to 62,767 tons, constituting an increase of 91 per cent.

A new electro-graphitic brush, known as No. 259, has been developed by the National Carbon Co., Inc., Long Island City, New York. It is stated that tests made on direct current motors and generators have showed the brush adapted to a wide range of voltages, current densities and speeds.

### General Utility Pneumatic Press

Of particular interest perhaps to makers of heat-treated gears, forgings and automobile parts, and for use in packing carbonizing material in pots around parts to be case hardened, is the press shown in the illustration, a recent development of the Hanna Engineering Works, 1765 Elston Avenue, Chicago.

The machine is designed as a general utility press and is operated by compressed air or steam. Various forms of platens, tables or work-supporting structures may be used, making it adaptable to straightening, bending, forcing, marking, embossing, forging, briquetting, multiple-riveting and similar operations. Ten sizes, from 15 to 200 tons, are available.



General Utility Pneumatic Press

The power mechanism is that used on the company's riveters and the manipulation of the operating valve is by hand or foot. The length of the die stroke is variable and no more than the rated pressure is exerted by the die regardless of where the die travel stops. The connecting mechanism between the die and the actuating air piston is a combination of toggle and lever. The air piston while traveling at a uniform speed imparts to the die a gradually decreasing speed and increasing pressure relative to the movement and pressure of the piston during the first portion of its stroke and at substantially uniform speed and pressure, also in substantially uniform relation to the movement of the piston during the last portion of its stroke. The first portion of the die stroke, or increasing-pressure stroke, is from  $1\frac{1}{2}$  to 4% in. long, according to the rating of the machine. The last portion of the die stroke, or uniform-pressure stroke, is from  $\frac{3}{8}$  to  $1\frac{1}{2}$  in. long. The die is mounted on an adjusting screw.

It is emphasized that the press is particularly adaptable in bending and straightening operations, since the pressure on the die only builds up as the air pressure builds up on the piston. By throttling the air and bringing the pressure up slowly, just sufficient pressure may be brought on the work to deflect it the desired amount, the pressure then being released.

If the die travel is stopped by the resistance of the work at any point within the uniform pressure stroke, which is anywhere beyond half the piston stroke, the pressure on the die is a known predetermined amount in direct proportion to the air-line pressure. The line air pressure is controllable by a regulating valve to within 5 per cent.

In marking, embossing and forging exact uniformity of results is said to be obtainable because just the proper amount of pressure for each requirement is available regardless of the manipulation of the operating valve or the variation in thickness of stock within the limits of the length of the uniform pressure stroke,  $\frac{3}{8}$  to  $1\frac{1}{2}$  in.

The floor space required is comparatively small and the machine is portable in the sense that it can be moved without moving any auxiliary equipment.

### Chicago Mill Strikes Ended

CHICAGO, Aug. 26.—The strike at the rail steel bar mills of the Inland Steel Co. and the Calumet Steel Co. at Chicago Heights, Ill., has been settled by granting the demands of the men for a 20 per cent increase in wages. This action was taken by the companies following the announcement of an advance of 20 per cent in the wages of common labor by the United States Steel Corporation. The strike has been in effect since Aug. 7.

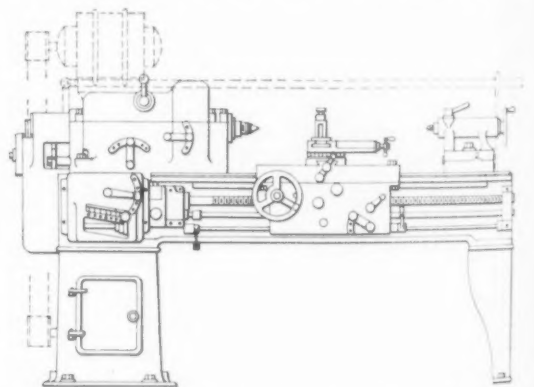
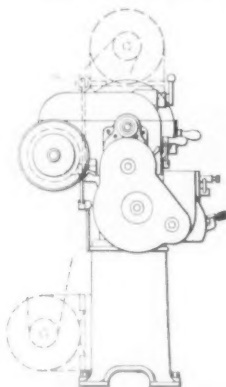
### New Line of Geared-Head Engine Lathes

A new line of geared-head lathes in sizes from 16 to 30 in. has been placed on the market by the Cincinnati Lathe & Tool Co., Cincinnati.

The machines are equipped for either belt or motor drive, the direct-connected motor-driven lathes being provided with either chain or belt drive with idler pulley. When equipped for single-pulley belt drive from the line shaft, a rod as shown on top of the lathe, or a handle at the front of the head are provided for starting and stopping. If required apron control is supplied. The motor may be mounted on the headstock or at rear of the cabinet leg.

Surplus power is a feature emphasized by the makers, it being claimed that all sizes develop approximately double the horsepower, size for size, of the usual design. The 16-in. lathe will develop a high pulling torque of 9.2 hp. with 56 lb. per in. of effective belt pull. The 22-in. geared head lathe is said to develop 15 hp.

The disk clutch with brake provided has a neutral position, which disconnects the spindle from the gearing, removing the fly wheel effect of the heavy gears on the spindle. This feature is intended to save time while centering irregular work in a chuck or in the machining of smaller parts where chucking time is a large factor. Twelve spindle speeds are available, these being conveniently manipulated by the three handles shown in the front of the head. The range of the 16



Gear-Head Engine Lathe Arranged for Belt or Direct Motor Drive. Either the rod at top or handle at front is furnished for starting or stopping

in. lathe illustrated is from 13.5 to 400 r.p.m., in geometrical progression. The full range of these changes is said to be made in 12 seconds.

As an example of the wide adaptability of the new machines for general shop conditions, the 16-in. machine shown is stated to machine work at full swing of the lathe at a cut speed of  $55\frac{1}{2}$  ft. per min. Smaller work can be machined at similarly economical speeds,  $\frac{1}{2}$ -in. work for instance being operated at 54 ft. per min.

The M. S. Little Mfg. Co., 151 New Park Avenue, Hartford, Conn., and the A. J. Beaton Mfg. Co., New Britain, Conn., plumbing and heating supplies, are to merge. Full details will not be available until next month, when stockholders vote on the consolidation. Present plans call for the moving of the New Britain company's equipment to Hartford.



# Progress in Human Relations in Industry<sup>†</sup>

## Wages Not the Only Factor in Making Men Contented —Mistakes in Employee Representation Plans

BY R. H. WEITZEL\*

**R**ELATIONS between employers and employees in the future are of greater moment and of more profound significance in their influence upon the future life of the nation than any other one matter which concerns us to-day. The proper solution of these problems depends upon the success with which the management on the one hand and the worker on the other are able to view each other's position with reasonableness.

The happenings of the last few months are likely to give the impression that high wages are all that is necessary to keep men in industry satisfied and contented. However, those of us who have had to handle the details of any considerable operation in industry know that this is a mistake. We are all wage earners, whether we work for day's wages or for a salary, and we all know how much easier it is to be happy on comparatively small pay, even though the work is very hard, if other things in connection with our employment are satisfactory.

We have all seen men leave their jobs for one offering higher pay, and soon be anxious to return to the old job at the old pay, and to work for the old boss. Satisfactory living and working conditions are of the utmost importance, but the "boss" is, after all, the big factor. The laborer is not any different in this respect from the clerk, foreman, superintendent or manager. All of us measure the value of our jobs to a larger extent than we realize by the relationships we sustain with our immediate superiors.

### Representative Plans

Up until perhaps ten years ago, thousands of employees in industry had never seen an officer of the company except those connected with the local management, and had no means by which they could take up a grievance except with their foremen and through their own individual efforts. Many thousands of them now have representatives, chosen by themselves, who can, when they think it necessary, take up any matter concerning their employment or living conditions with higher officers of the management, and feel confident of receiving sympathetic consideration.

This new method of dealing with employees was such a radical departure from what had been the practice for so many years that naturally a great many mistakes were made, and the most common mistake, to my mind, was that the machinery employed failed to consider the foreman. The plan usually provided for a meeting of the officers of the company with the representatives of the employees without the foremen being present.

### The Foreman's Position

The foreman had been trained to feel that his authority was supreme; he hired or fired as he pleased, and made his own rules of discipline and enforced them. He suddenly found that his subordinates had a way of going around him or over his head, and I think sometimes the management was inclined to listen to one side of the story and form judgments before hearing what the foreman had to say. Much better results would have been obtained at the start if the foreman had been called in and had explained to him the necessity for the change, and had an effort been made to get his sympathetic co-operation. This mistake, I think, has been to a large extent corrected, and the foremen have been made to see the justice of the new

arrangement, and are now working sympathetically with the new methods. It is obvious that little real progress can be made except with the hearty co-operation of the foreman. He is really the most important link in the chain of industrial management.

To my mind, the modern industrial organization is similar, in many respects, to a modern central power plant, with a generating station, step-up transformers, transmission lines, step-down transformers, low tension lines, controllers and motors. The president, or board of directors, represent the central station. They devise and initiate the policy. The policy may be of the very highest character, and the officials may have the highest aims and ideals, just as the power plant may have the best boilers, the best fuel, good water, good draft, and efficient engines and generators, but if the transmission line is weak, has too small copper or poor joints, the voltage will not be delivered to the step-down transformers at the point of operation. If the connection between the president and the operating people is weak and has not a good transformer, the operating official will not be imbued with the spirit at headquarters. Lack of co-operation between managers and superintendents, or between superintendents and foremen corresponds to bad joints in the transmission line. You may have capable men, just as you may have good wire of sufficient size, but if they are not hooked together properly and do not co-operate, you will have the same result as you get from a poor joint on the transmission line. The foreman represents the controller. Very often a controller is put in in an emergency, and is too small to carry the current necessary. The result is that it heats up and burns out. All the other factors from the plant, through the transmission line, transformers, and up to the controller may be perfect, and if the controller has poor contacts, or is too small, the motor will not operate properly. There may be men of the highest type, from the president down, they may all co-operate, but if the foreman who has the direct control of the labor is too light for the job, or heats up too quickly, the operation will be poor.

### Selection of Foremen

The foremen have been receiving a great deal of attention in the last few years, and very properly so. In addition to this, the managers and superintendents are paying a great deal more attention to the character of men they select for foremen. In former years the principal qualifications for a foreman were that he be a good hustler and have a knowledge of the work to be done. In fact, not so many years ago I believe foremen were selected for their driving qualities. We still need the foremen with knowledge of the work and plenty of initiative and hustling ability, but we now feel that we need a foreman who is a leader rather than a driver. The foreman's position is perhaps the most difficult in all the chain of industrial management. Besides having the initiative, energy, skill and executive ability, to be successful to-day, he must be patient, tactful, considerate, thoughtful, and above all, honest, friendly and sympathetic. What cannot the foreman accomplish who is able to impress his subordinates with the feeling that he is always ready to assist the incompetent with advice, to overlook small and unintentional mistakes, to talk over with them their small difficulties, whether connected with the work or outside their employment?

I know that many believe that only the sternest discipline will produce results and that any unbending on the part of a superior tends to produce inefficiency. I am sure, however, that no greater fallacy exists.

\*General manager Colorado Fuel & Iron Co., Pueblo, Col.  
<sup>†</sup>From an address at a conference on human relations in industry held at Estes Park, Col., July 28-30.

## HIGH-SPEED BROACHING UNIT

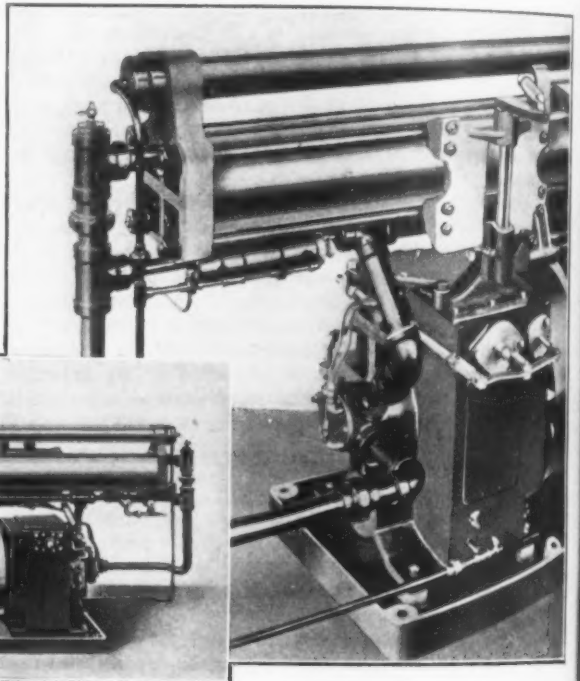
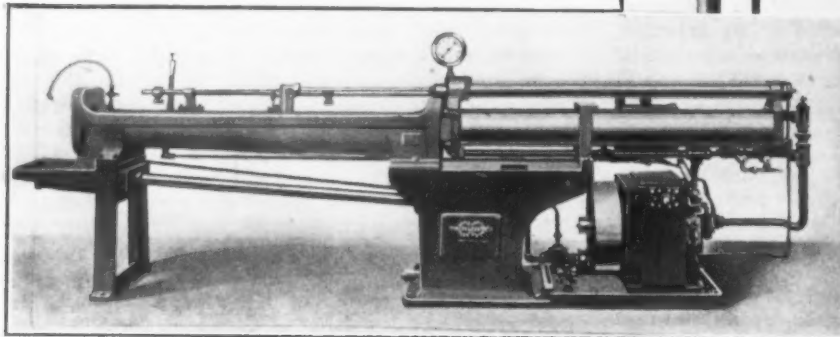
### Increased Production Claimed for New Hydraulic Machine—Features Described

Increased production ranging from 75 to 200 per cent over the usual type of single or double-pull broaching equipment is claimed for the new hydraulic broaching machine illustrated, a product of the Oilgear Co., Milwaukee. The features underlying the increased output include the higher speed available, 360 in. per min. maximum; practically unlimited choice of speeds; and the automatic control of the cutting and return strokes, entirely independent of each other. Decreased unit labor cost and lower unit power cost are also claimed.

As an example of the efficiency of the machine, the production figures of the work of broaching four solid keys in a differential gear, 1¼ in. bore by 2 in. long, and of 0.22 carbon steel are given. The cutting speed was 288 in. per min. and the return speed, 312 in. There were two broaches in the set and the draws per hour were said to average 145. The maximum horsepower used was 5½ for a cutting time of 6½ sec.

The company's standard type MD variable-delivery pump is used and delivers a steady flow of oil to a double-acting cylinder, the piston rod of which is connected to a sliding head, which operates on ways in a U-shaped trough. The amount of oil delivered to the cylinder depends on the length of the stroke of the pump, which can be varied from zero to a maximum.

Hydraulic Broaching Machine. The illustration at the right is of the rear end and shows the pump. Slight variations in speeds within the limits of 48 and 360 in. per minute is a feature



The speed of the piston travel being dependent on the amount of the oil pumped into the cylinder, this speed can be changed at will by changing the stroke of the pump. It is emphasized that it is this method of controlling the speed, together with the even flow of oil delivered by this type of pump, that makes it possible to use higher speeds than usual. The cutting stroke is started without shock and the pull is steady. The choice of speed within the limits of 48 in. and 360 in. per min. is practically unlimited for either the cutting or return stroke and slight variations are easily obtainable. This range permits selection of correct speeds for different materials and broaches.

The speed of the return stroke is adjustable independently of that selected for the cutting stroke. Automatic stops are provided; these being set for any desired length of stroke and the stroke remaining fixed. Reversal of the machine is by simply pressing a push button, the control being also set for automatic reversing. An emergency lever is provided for stopping the machine instantly at any point of the stroke. Quick-acting relief valves intended to prevent the pulling apart or the buckling of a broach are provided. One of the valves is mounted on the cutting end and another on the return end. They automatically relieve the pressure and stop the machine when the pressure builds up to a predetermined point.

The machine is driven by vertical belts from the line shaft or motor, the latter being mounted above the

main cylinder on an adjustable support. The pulling capacity is 16,000 lb., equivalent to that required by a 2-in. square broach, and the stroke 56 in. The diameter of the hole in the face plate is 5 in. and the vertical adjustment of the drawhead 1½ in. above and below center. A 10 hp. motor is used. The floor space occupied is 26 in. by 16 ft., and the weight of the machine 2,900 lb., net.

### Orders for Locomotive Castings

SPRINGFIELD, Ohio, Aug. 29.—An order to furnish castings for 45 locomotives booked by the Lima Locomotive Works was secured Friday by the Ohio Steel Foundry Co., which has plants in Springfield and Lima. The locomotives are to be built for the Missouri, Kansas & Texas Railroad Co. During the past 60 days, the company has been awarded orders for locomotive castings for 180 engines, including the order just received. The Springfield and Lima plants will be rushed with work for months. Substantial orders for miscellaneous castings for agricultural and motor truck companies are being received. Indications are that the force at

the Springfield plant will soon be increased. At present 200 men are employed.

The Lima plant of the Ohio Steel Foundry Co. has been running full time for the last seven months. The Springfield plant has also been speeding up. The Lima plant turns out heavy castings and the Springfield works makes the light castings. The company is equipped to handle the business coming to it. The only handicap at present is the scarcity of material. Owing to the strike some rolling mills cannot furnish steel.

### High Cost of Strikes

Although industrial disputes in Pennsylvania in the first six months of this year numbered only 257, outside the coal, railroad and printing strikes, a very favorable showing as compared with any of the past four years, the loss in wages greatly exceeds that of any of these years, according to a report by the bureau of mediation and arbitration, Pennsylvania Department of Labor and Industry. For the first six months of the year, strikers in Pennsylvania lost in wages a total of \$117,546,466, this being exclusive of the railroad shopmen's strike, which did not begin until the end of the period. Striking coal miners are estimated to have lost a total of \$114,502,914. Adding the further losses since June 30 makes a total approaching \$200,000,000. In 1921, in 1210 labor disputes, the strikers lost in wages \$38,375,104.



# Call for Higher German Export Duties

Great Increase in Home Demand—Exports Confined Largely to  
Highly Finished Products—Labor Scarcity—  
Discarding 8-Hour Day

BERLIN, GERMANY, Aug. 9.—The question facing producers is the shortage of fuel and skilled labor. For the first time on record the Steel Syndicate has twice raised its prices with only an eight days interval. The agitation for reintroduction of compulsory maximum prices (abolished in April, 1921) for Steel Syndicate products continues. (The Berlin cable of Aug. 20, published in THE IRON AGE of Aug. 24, page 492, reported the rejection of the proposal by the Iron Trade Association.) The complaint of consumers is that the syndicate is exploiting the general scarcity in order to raise its rates more than is justified by the rise in production cost.

Exporters' profits in marks have been greatly increased by the sudden exchange collapse; and the Government, with aim of getting some of the extra profits for the public, has submitted to the Reichswirtschaftsrat a bill doubling the export duties on iron and steel. These duties are mostly around 6 per cent and on no goods do they exceed 10 per cent. Exporters and various bodies, including the German Trade and Industry Congress, are opposing the bill, declaring that a system of rigid export duties, which cannot be rapidly adapted to varying exchange conditions, must fail. For heavy iron and steel the export duty question is not important, as the scarcity is so great that imports actually exceeded exports in recent months.

The prices of finished metal goods, machinery, electro-technical plant, etc., are far below world market level at present exchange. The *Frankfurter Zeitung's* index for Aug. 1 shows that the mark prices of finished goods average 85½ fold more than in 1914. At the mark's present gold exchange of around 200 to 1, gold prices of finished goods are therefore less than half those of 1914; and a heavy export duty could be levied without danger of causing under-selling by foreign competitors. As instance, the latest standard price of the best quality full-sized German typewriters, corresponding in ambitions if not in quality to the dearest American machines, is only 20,000 marks (or at exchange of 800 m. only \$25 and at 1200 m. nearer \$17).

The shortage of pig iron is acute. Lack of coke in July caused some smelting works to reduce output, and the use by other works of dear English fuel was a factor making for higher prices.

The home demand for semi-finished material is enormous; and foreign demand, though small, cannot be satisfied. In railroad permanent way material, the works are behindhand with their orders for the State,

and the private demand for light and mine rails cannot be met. In early July, export was checked by the fact that German prices had about reached foreign levels, and after the new mark drop changed this, the home demand grew so enormously that there is practically an embargo on export. One cause here is a sudden revival of building. Bars and girders are in great demand; and the supply has long been inadequate. Even in exports the last monthly trade report shows exports of only 40,780 metric tons of these rolled products against imports of 51,220 tons. The same is true of tubes, of which exports were 4950 tons against 16,971 tons imports.

The increasing tendency is to consume the relatively cheap heavy and semi-finished metal in home manufacturing, and to export high-priced machines and other highly finished goods. This policy is leading to an ever greater insufficiency of skilled labor. The number of unemployed on July 1, 1920, was 322,923; on July 1, 1921, it was 314,475, and on July 1, 1922, 19,864. The last figure is about one-fourth of the normal unemployment in good pre-war years. Reports from Westphalia show that the 8-hr. day is being increasingly broken in the heavy metal branches. The Upper Provincial Court of Cologne has decided on appeal that violation of the 8-hr. law by employers is not punishable if the employees are consenting parties.

New iron ore fields have been discovered at Wolfenbuettel in Brunswick, and a concession to mine has been granted. Ore prices have risen rapidly, Siegerland Rostspat being now 1922 m. per metric ton, as against 750 m. at end of 1921 and 19¼ m. in 1914. The Mannesmann Tubes Co. has absorbed the Bergwerks A. G. Consolidation. The Association of Electro-Technical Concerns reports that Germany in this branch has lost her pre-war rank of leading exporter. In 1913, the order was Germany, England, United States, France and Switzerland. The present order is United States, England, Germany, France and Switzerland. In 1913 Germany's exports were 52 per cent of those of all five, England's 22 per cent, and the United States' 16 per cent; in 1921 the United States' proportion was 40 per cent, England's 28 per cent, and Germany's 21 per cent. Former enemy countries exclude German electrical products, and some of the former neutrals have imposed customs barriers and import prohibitions. The monthly value of German electrical exports in 1921 averaged 12,000,000 gold marks against 30,000,000 gold marks in 1913.

## GERMAN INDUSTRIAL STANDARDS

Their Spread and Their Impression on Import Countries—American Engineer's Report

"The day may not be far distant when American manufacturers will receive inquiries from overseas countries to furnish goods according to the German national standards, and it behooves us to plan in time to meet such conditions."

This statement is contained in a communication to the American Engineering Standards Committee from Oscar R. Wikander, an American engineer, who has just returned from Germany, where he represented the committee in conferences concerning the international standardization of ball bearings. Describing the great strides in standardization that have been made by German industries during the last few years and the important foreign trade advantages accruing to German industries because of their intense standardization activities, Mr. Wikander said:

There is no doubt that one of the main reasons why

forward-looking Germans force their standardization work is because they want to introduce German standards in the great importing countries, and possibly in the whole world. Many European countries follow the German lead very closely. The great German deliveries in kind to France will no doubt be made as far as feasible according to German standards, thereby introducing them in that country.

It was only a few years ago that the "Normenausschuss der Deutschen Industrie," an organization corresponding to our American Engineering Standards Committee, was formed but the amount of work which it has already accomplished is stupendous. It has already issued several hundred sheets of approved standards, and about twice as many are already published as proposed standards. By personal investigation I found that the great output of standards was merely due to the enormous efforts put forth and to the enthusiasm of the great majority of the interested parties.

This enthusiasm is due to a more or less general recognition of the great economic value of standardization, and to the very generally accepted opinion that a standardized industry would be one of the strongest weapons in Germany's struggle for economic rehabilitation and financial reconstruction.

To give a concrete illustration: At the time of my visit, a syndicate of 19 German manufacturers and one Swedish

manufacturer were executing an order for 700 locomotives for Russia, all of the same design, and every part in every one of them was being made interchangeable with the corresponding part in all the others, all parts having been manufactured to the same fits and tolerances. This feature will have the great advantage of permitting the Russian railroads to use any disabled locomotive as a store of spare parts for all the others. It is easy to realize what great advantages German manufacturers of locomotives will have over those of other nations when competing on the basis of such specifications, and this example illustrates the economic advantage which can be gained by German industry in introducing its standards in all countries importing mechanical equipment.

Another error in our conception of German standardization is the belief that the "Normenausschuss" is autocratic in its methods and is not in as close contact with the industries as our own standardizing bodies. I found, on the contrary, that absolutely the same methods are used there as here to arrive at national standards. It is a large organization, built up along the same lines as the American Engineering Standards Committee. Its personnel consists of the same high

grade type of men, only there are more of them and their work is greatly facilitated on account of the eager response from the German industry, whose leaders look to standardization as one of their greatest hopes for salvation.

It was proposed that they should send to the American Engineering Standards Committee all the drafts of any importance submitted to their own committees for consideration, so as to make it possible for them to obtain American comments on important propositions, which might be of value in making final decisions. It was also suggested that the American Engineering Standards Committee keep the "Normenausschuss" posted on its more important work. England seems to have realized fully the importance of recognition of her standards, and is trying to force the adoption of them in her colonies and dominions.

In conclusion, I hope that the example of the German engineers and manufacturers may spur us to make equally large contributions in work and money to the cause of standardization, and that our leading engineers may try to realize the enormous economic importance of both national and international standards.

## FRENCH MARKET IMPROVED

Price Tendency Is Upward—Exports Aided by Strikes in United States—The Blast Furnace Status

(Special Correspondence)

PARIS, Aug. 17.—The iron and steel market is showing a real improvement. Inland markets are affected and prices are firm, with a rising tendency. But the improvement has been caused principally by the progress of exports, favored by the rise of British currency; strikes in the United States, which permit French and Belgian producers to supplement decreasing American supplies in export markets; also the extreme instability of the German mark, which prevents German producers from booking forward orders.

On June 30, of the 220 blast furnaces in France, 91 were in blast (2 less than on May 31). The following shows the situation in Lorraine on Aug. 11:

	Total Furnaces	In Blast
de Wendel .....	18	13
Hagondange .....	6	4
Knutange .....	10	5
Rombas .....	8	6
Terres Rouges		
Audun-le-Tiche .....	4	2
Ottanges .....	3	1
Redange-Dilling .....	3	0
Thionville		
Société Lorraine Minière et Metallurgique .....	4	2
Eckange		
Acieries de Nord et Lorraine....	6	2

During the first six months of 1922, France produced 2,261,000 tons of pig iron and 2,045,000 tons of steel.

**Iron Ore.**—On Aug. 9 the French Railway Board increased from 15 per cent to 25 per cent the previous reduction on rail transportation rates for exported iron ore. The prior reduction of 5 per cent for full trainloads of 180 tons and more has been supplemented by a reduction of 4 per cent on shipments of 120 to 180 tons. A revision of the whole rate schedule will be made in October.

**Coke.**—The adjusted price of German reparations coke delivered to French blast furnaces will be maintained for September at 97 fr., at the frontier.

**Pig Iron.**—Foundry iron is slightly firmer. The current price is 205 to 210 fr.

Negotiations for the renewal of the Comptoir des Fontes Hématites have failed, and the Comptoir stands dissolved as from Aug. 31. The dissolution of the Comptoir des Fontes Hématites is generally deplored, as was the dissolution, last year, of the Comptoir des Fontes phosphoreuses de Longwy, to which may be attributed the bad state of the pig iron market.

British East Coast hematite, mixed numbers, at 90s. f.o.b. (about 250 fr.), is now selling in French Northern ports at 310 to 320 fr.

**Semi-Finished Steel.**—Prices are unchanged, but the inland demand has improved and prices of billets and flat bars show a rising tendency. Deliveries are from eight to ten weeks.

Works in the North of France are considering delay in relighting their blast furnaces, and operation of their rolling mills on semi-finished steel products purchased in Lorraine. It is reported that one company in Meurthe-et-Moselle is purchasing semi-finished products in Lorraine.

**Beams.**—The situation is quiet but the volume of business satisfactory. The price, f.o.b. Antwerp, now quoted for export is 385 to 390 fr. (Belgian), or 365 to 370 fr. (French). Some small tonnages have been booked by French works, notably for India.

**Rails.**—The French railroads have not yet allocated their orders for rails. Lorraine works have taken orders for mine rails in France and in Germany.

**Rolled Merchant Products.**—The demand for rolled merchant products has improved and prices are rising. The basis price is now 430 to 440 fr. in the East and in Lorraine. A good demand for angles is reported, and the Cie. du Chemin de Fer d'Orléans has placed an order for angles (used in electrification work) at 395 fr.

**Sheets.**—The situation in the sheet market is improving. Orders in August are better than in July, which was a better month than June. No advance in price has been indicated by the Comptoir des Tôles, but the concession formerly made on light sheets to induce purchasers to buy ahead has been discontinued. British offers of sheets are appearing again in the import market.

**Steel Wire.**—Prices are firmer at 460 to 480 francs.

**Castings.**—Previous improvement continues but prices are low. Recently a Western foundry booked an order for *coussinets* from the French State Railways at 445 fr.

**Scrap.**—The following prices are now quoted per metric ton, on truck at selling works:

	Fr.
Machinery scrap .....	200
Cast-iron scrap .....	150
Turnings .....	130

## British Steel Exports and Imports in July

British exports of iron and steel in July, according to a cable to *Commerce Reports*, were 251,743 gross tons, a considerable improvement over those for June which were 236,298 tons but less than those in May at 272,437 tons. Imports in July were 55,893 tons as compared with 52,775 tons in June and 60,939 tons in May.

Aluminum producing firms in England have been asked to supply Bulgaria with enough aluminum to produce coins of 1 and 2 leva denominations to the total nominal value of 60,000,000 leva. This is in connection with a new law permitting the use of aluminum for this purpose. At normal exchange the lev is valued at 19.3c.; at present, however, \$1 will purchase about 150 leva.



# Detroit Does Not Take Gloomy View

Some Manufacturers Are Hopeful Despite Announcement of Plan to Close Ford Plants—Coal Being Delivered to Foundries More Freely

DETROIT, Aug. 28.—Despite the announcement last Saturday of the plan for closing the Ford plants, Detroit is not in a gloomy condition. The distinct impression is that the whole truth in regard to the reason for the Ford announcement has not been told. Other manufacturers are of the opinion that conditions are improving to a moderate extent. Coal is being more freely received by leading dealers and deliveries to foundries are more satisfactory. There is a chance for decided improvement in a few weeks.

## The Ford Announcement

The Ford Motor Co. announced that its three local plants, Highland Park, River Rouge and Lincoln Motor, would close Sept. 16. By that time, according to Mr. Ford's view, with coal receipts continuing at their present rate, its reserve stocks would be exhausted and it would have on hand only sufficient fuel to bank its one active blast furnace and keep its coke ovens warm. In making the announcement, Henry Ford said this decision was arrived at because his companies "were confronted by the situation that, under the present handling of coal, there would never be a time when they would have sufficient coal to operate the several departments of the plants simultaneously. Of necessity, therefore, they must close down sooner or later. We wish to keep enough coal to keep our furnaces and coke ovens warm; to let them get cold would cause us a loss of hundreds of thousands of dollars."

## Shipments Suspended

Mr. Ford further announced that notices to suspend shipment had been sent out by telegraph to nearly 2000 concerns supplying his companies with materials and parts. In the local Ford plants, probably 55,000 men are now employed, turning out about 5200 cars per day, while the assembling plants in various parts of the country employ some 30,000 additional.

This announcement followed several curtailment steps calculated to stretch the Ford coal supply to the limit. Two or three months ago, shipments of pig iron to concerns making Ford parts were either reduced to the exact tonnages required or were cut off completely, and two weeks ago all outside shipments of both coke and pig iron were discontinued. Announcement was then made Wednesday that the tractor plant would close, and Saturday the decision was reached to close the entire three plants.

In the face of this announcement, it is interesting

to note that, as a whole, Detroit industries have held their own through August, with employment near the maximum for the year.

This is shown by the Employers' Association report. The end of the first week in August bore all the earmarks of the beginning of a decline in employment where the figures dropped from 183,000 to 181,000 during this second week, but were regained during the third week and present figures are approximately at the peak of the year, or 183,000. These figures do not yet include the retrenchment at the River Rouge tractor plant of the Ford Motor Co., where from 3000 to 6000 men were notified of an indefinite suspension of operation on Wednesday, Aug. 22. The Ford Tractor Co. has accordingly withheld shipments of castings and other material for tractor assembly.

## Pig Iron Distribution Curtailed

Priority measures within the Ford Company have likewise curtailed the distribution of pig iron to their outside sources for castings. Consequently, there has been a rush of these melters to cover on pig iron requirements and this has had the effect of bringing in iron from unusual sources.

Probably on an average the public utilities companies are no worse off for fuel than they were two or three weeks ago. The week was marked by a particularly acrimonious exchange of courtesies between State Fuel Administrator William W. Potter and Federal Administrator H. B. Spencer. A disturbing factor of the week was a scarcity of open top equipment, due to the mandate of the Interstate Commerce Commission that this equipment be returned to the mines empty. There has been some scarcity of box and automobile cars for some time past, so that this will be an added incentive to greater "drive-aways" from the automobile plants. The Saginaw district mines are getting into production, but their normal markets are within a 100-mile radius and Michigan as a whole depends on outside sources for its fuel.

The automobile industry, particularly in the lighter cars, while not at the year's peak of production, has not shown the usual and predicted seasonal slump. In numerous cases, production is hampered by lack of raw and assembling materials, sheets being a determining factor. Manufacturers have been unable to get their quota of sheets even where they are protected by several sources of supply on this material, due to the fact that many of the sheet manufacturers do not produce their own steel.

## Dissension Among Unions in Connellsville Region

UNIONTOWN, PA., Aug. 28.—Posting of notices of the Sept. 1, 1920, scale, the highest ever paid in the Connellsville bituminous region, injected a new situation into the Connellsville bituminous strike last week. The H. C. Frick Coke Co. posted the notices of the wage increase late Tuesday evening, and this action was followed by the posting of similar notices at the independent plants on Wednesday morning.

The posting of these notices was the signal for meetings at practically every plant throughout the region at which the strikers discussed the new wage situation. The last half of the week saw no great increase in return of strikers to places in the pits but observers are watching with interest developments during this week.

The afternoon the new wage scale was posted, union leaders were meeting delegates from each of the new union locals at a convention held at Brownsville Junction. This meeting developed that there is a de-

cided split in the union ranks with a large element of the men desiring to return to work. The fight came over the adoption of a resolution approving the wage agreement at Cleveland, one faction here opposing the approval because the agreement was not national in its scope. While the resolution was finally ratified, it was not without a fight and with indications that a break is more than likely in the union ranks.

Older employees of the region are leading in the agitation for acceptance of the new wage scale and return to work. The principal agitation for a fight to the finish is led by the union organizers and the younger workers in the region.

The action of the Frick company and independents in posting the new wage scales at this time came as a complete surprise. Observers did not expect a break in the strikers' ranks the past week, but are looking for some drastic changes during the next ten days. As a matter of fact quite a few of the strikers in the region

have returned to work already, but not in large numbers. Importation of men continues into the region and the production is being increased rapidly. The older workers who are on strike realize that the new wage scale is a lure for men in other mining regions and that unless they return soon all their places will be filled by outside workers. As a matter of fact, a number of men from union fields are coming into the region.

The new scale here averages slightly higher than the union scale and in addition the workers have the advantage of paying no union dues and better working conditions than exist in the union fields.

Coal and coke shipments are showing big gains throughout the regions, new records having been set by

railroads each succeeding day this week. Shipments on Friday are indicative of the production and were 1166 coal cars and 290 coke cars. Daily average shipments over the Baltimore & Ohio for the Smithfield district during the week were 184 cars, considered above normal. There has been an increase in shipments over the entire Baltimore & Ohio Connellsville region lines. For the week ending Aug. 19, there was an increase of 300 cars over the preceding week which increased 500 cars over the week preceding that. A high water mark also was reached last week in river shipments of coal and coke. On Friday 26,400 tons or 464 cars of coal and 1709 tons or 36 cars of coke passed through Lock No. 5 on the Monongahela River at Brownsville.

## Transportation Problems in Valleys More Serious

YOUNGSTOWN, Aug. 28.—The transportation situation is growing more serious in its effects on the industry. A sheet producer reports that it is shipping four-fifths of its output in bad order cars. Another company has been shipping some sheets in open top equipment, covering them as much as possible. One interest is using stock cars occasionally for the shipment of nails.

Car shortage is expected to prove more of an impediment to the industry as coal movement increases. Occasionally refrigerator cars are being employed in shipping tin plate. Leaders in the industry, such as President James A. Campbell of the Youngstown Sheet & Tube Co., do not believe better than 50 per cent operations are possible before the close of lake navigation.

Coal supply is still woefully inadequate, though the output is increasing and the outlook in this respect, as viewed by Valley executives, is much brighter than it has been. Prices are receding to between \$5.50 and \$6, at the mines, for coking coal, but these are still regarded as out of line by industrial consumers in this territory, who are making little effort to buy in a large way.

Inbound coal shipments for one large Valley producer last week varied from six to 10 carloads per day, whereas its normal consumption averages 135 cars daily.

Valley interests have posted notices at their Pennsylvania coal mines, re-establishing the Sept. 1, 1920, wage scale, but as yet there has been little response on the part of the men. In the non-union fields, it is

claimed that the wage issue has now become secondary to the demand of the men for recognition of the unions. Steel companies in this territory operate their mines either non-union or open shop.

Independents which have provided housing facilities for their miners have as yet made no attempt at eviction of the men and their families. One such interest, though, is planning a move in this direction, unless the men display a desire to return to work. It is felt that the approach of cold weather and the urge for funds will prompt many of the workers, who have now been idle for nearly five months, to resume digging at an early date.

In view of the improved outlook, a number of interests are tentatively sounding out the market for coke supplies, among them the Trumbull-Cliffs Furnace Co., the Sharon Steel Hoop Co. and the Struthers Furnace Co., whose stacks are idle. Blast furnace coke now ranges from \$12 to \$13 per ton, against a recent high of \$15.

No surplus pig iron is available in this territory. The \$35 quotation still rules in a nominal way on semi-finished material, but all Valley interests are out of the market. Non-integrated rollers are still getting sufficient supplies to enable them to maintain operations at a normal rate. One such interest was promised 1000 tons during the week by a Valley producer.

Price advances covering the semi-finished market will probably apply on fourth quarter business. The practice is to adjust prices on such contract business quarterly.

## Contractors Protest Against Coal Order

WASHINGTON, Aug. 29.—Hearing granted by the Interstate Commerce Commission last Friday to the Associated General Contractors of America on their application for the elimination of the fifth or "all other purposes" classification of priorities for coal in Car Service Order No. 23 was attended by representatives of the iron and steel, lumber, and coal industries, but they did not participate in the proceedings. Iron and steel and lumber interests have shown an interest in the proposal because they are included in the fifth classification, which the Associated Contractors maintain is superfluous. The Associated Contractors contend that it is necessary to speed up the movement of building materials.

The only witness was R. C. Marshall, general manager of the Associated Contractors. In the course of the hearing, lasting less than one hour, Mr. Marshall submitted figures to justify the claim that unless the order was changed so as to provide coal other than for uses specified in the four preferred classes of priority, construction operations would shut down. He admitted that there would not be enough cars for loading all the coal offered, but contended that no preference for coal loading should be given for anything other than that intended in the four preferred classes.

Commissioner Aitchison, in charge of the hearing, who is a member of the Federal Fuel Distributing Committee, wanted to hear from industries on the subject of the service orders in order to be prepared to

change them quickly if conditions warranted such action, but it was intimated that there would be no further formal hearings regarding the question. It was indicated by Commissioner Aitchison that more formal hearings would not be helpful because the law authorizes the commission to act without holding hearings.

## Independent Production Very Low

YOUNGSTOWN, Aug. 29.—Curtailed iron and steel production in the Mahoning and Shenango Valleys is reaching to finishing lines in a more decisive way. The Brier Hill Steel Co. is operating its by-product coke oven department at 30 per cent, while the Youngstown Sheet & Tube Co. has but one battery of six on the active list. Thirteen tin plate mills at the plant of the Trumbull Steel Co. are inactive.

Independent iron and steel production is virtually at the lowest rate this year. No Bessemer steel is being produced by independents, and the number of active open hearths has been reduced to 30, of 51. Only three independent blast furnaces are operating, though the Shenango Furnace Co. planned to put its No. 1 stack at Sharpsville in blast.

This furnace will supply hot metal to the Valley Mold & Iron Corporation, supplying ingot molds to Valley open-hearth departments.

Bar production is negligible, as only one unit is



scheduled at the plant of the Republic Iron & Steel Co., for three days' production. The company's plate mill was placed on the active list for the same period.

Skelp rolling has been reduced to one mill each at the plants of the Republic and Sheet & Tube companies.

A shortage of semi-finished steel is cutting heavily into the time of rolling crews on blooming and bar mills. In at least two plants, rolling mill crews are working only five and six hours on a 12-hr. turn.

A gain of one pipe furnace over last week brings the total number of operating mills to 14, of 17, in the Mahoning Valley.

Fabricators are slowing down in some departments, due to inability to get steel and depletion of stocks.

### Increased Production of Coal

WASHINGTON, Aug. 29.—An output of at least 6,000,000 tons for the week of Aug. 21-26, the twenty-first since the strike began, was assured by reports for

Monday, Tuesday and Wednesday, the Geological Survey states in its weekly report on coal production, but additional tonnage from other districts that have signed the Cleveland agreement may raise the total to 6,250,000 tons. Production of anthracite remains practically zero. The increase in production was chiefly in central Pennsylvania, western Pennsylvania, the Fairmont and Panhandle districts of West Virginia and Ohio. In these districts collectively the daily rate of production exceeded by 156,000 tons, or 130 per cent, that of the week before. The increase in central Pennsylvania was about 90 per cent; in western Pennsylvania, 40 per cent; in northwest Virginia, about 170 per cent, and in Ohio, 115 per cent. Even with an output of 6,250,000 tons of bituminous coal a week, production is greatly below normal. In the corresponding period of 1921, production totaled 9,640,000 tons, of which 7,750,000 tons was bituminous. The year before that, the total raised was 13,250,000 tons. In comparison with these figures, the output last week was from 4,000,000 to 6,000,000 tons short.

## Few Operators Oppose the Cleveland Surrender

PITTSBURGH, Aug. 28.—Crumbling of the opposition by union coal operators to signing the Cleveland agreement continues in this district and while companies representing a large tonnage remain obdurate, the belief prevails that many of them will abandon their stand during the coming week and go along with those which have signed. An interesting development over the week end has been the acceptance of the Cleveland agreement by the Midvale Steel & Ordnance Co. and the Lackawanna Steel Co. The Vesta Coal Co., the Jones & Laughlin Steel Co. subsidiary, resumed operations to-day in five of its mines, while six of the operations of the Union Coal & Coke Co., the Midvale Steel & Ordnance Co. subsidiary, reopened, and also three mines of the Ellsworth Collieries Co., owned by the Lackawanna Steel Co. Resumption at the Jones & Laughlin mines should have immediate effect upon the blast furnace and steel works operations of that company, since its mines are located on the Monongahela River and it can bring down practically all of its production by water and thus avoid interference from priority regulations, to which rail shipments are likely to be subject.

### Some Conditions Worse

But while the situation with regard to hitherto union mines is improving, the situation in the Connellsville district, hitherto non-union, if anything, is worse than it has been. The announcement a week ago by H. C. Frick Coke Co. restoring the Sept. 1, 1921 scale, effective Aug. 23, instead of leading to a return to work on the part of its men, seems to have increased their inclination to stay out until this and other companies sign an agreement with the union. The union organizers have told the men that the re-establishment of the 1920 scale is the result of the union efforts and that only by remaining out until the Frick Company and others in the Connellsville district recognize the union, will the advantage gained be safeguarded. Since the great bulk of the operators in the Connellsville district are opposed to recognition of the union, it begins to look as though the trouble in that district would be rather long drawn out and a general resumption of the mine and coke oven operations is not near at hand.

### The Priority System

Setting up the machinery for carrying out of the priority system is making rather slow progress, at least so far as actual results are concerned. The Pennsylvania Fuel Commission, at meetings last week, set up "fair" prices and named regional directors, but so far as actual control over shipments goes, the market still is an open one and coal is going where the price is highest without much regard to preferential consumers. The "fair" prices set up by the Pennsylvania authorities are \$3.75 per net ton at mines for thick vein and easily mined coal and \$4.50 for thin vein coal,

which is more costly to get out. These prices are to govern on interstate shipments, but it is believed they eventually will also apply on intrastate business. Brokerage commissions are limited to 25c. per ton regardless of the number of hands through which a sale passes. In other words, thick vein coal sold through brokers must go to the consumer at not more than \$4 at the mine and thin vein coal at not more than \$4.75 at the mine. The market, however, still is far above these levels.

### Will Go Ahead with Clairton By-Products Coke Plant

PITTSBURGH, Aug. 28.—The Carnegie Steel Co. has definitely decided to go ahead with the addition to its Clairton, Pa., by-product plant and has just signed a contract with Koppers Co., Pittsburgh, for 366 by-product coke ovens, together with auxiliary plants. This addition will bring the total number of ovens at this plant to 1134, having a carbonizing capacity of 21,500 tons of coal a day. The plant as it now stands consists of 768 ovens and has a carbonizing capacity of 13,000 tons of coal daily, or about 17 tons per oven per day. In the 366 ovens to be built, 8500 tons of coal can be carbonized daily, an average of more than 23 tons per oven per day.

The new ovens are of a design recently perfected by the Koppers Co. and are of a combination type, so arranged that they may be heated with producer or blast furnace gas, releasing all of the coke oven gas for use in the steel mills. Improved quality of coke produced, making possible more economical blast furnace practice by reducing the consumption of coke per ton of pig iron produced, faster coking time, giving greater capacity per oven per day and stronger construction are the principal advantages claimed for this new type of oven, the inventor of which is Joseph Becker, consulting engineer, Koppers Co. An experimental battery of these new ovens has been in operation at the plant of the Koppers Co. in Chicago for the past year with remarkable results as regards speed of coking and the quality of the coke produced.

Furnaces will be installed by the Weldless Tube Co., Wooster, Ohio, in its new seamless tube plant from designs Buell, Schieb, Mueller, Inc., Pittsburgh, which designed and is supervising the installation of two furnaces for the Fort Pitt Spring & Mfg. Co., at McKees Rocks, Pa.

## PRICES RISE, OUTPUT LESS

### Slackening in Production Due to Labor Troubles— Decline in Building Contracts

Under the above title, the Department of Commerce summarizes the industrial situation in the advance sheets of its monthly "Survey of Current Business." The slackening of industrial output, while partly seasonal, is attributed chiefly to labor troubles, resulting in scarcity of fuel supplies and in difficulties in transportation. With the accumulating shortage of many commodities prices have risen at an increased rate, most notably in coal, animal products, cotton and sugar. Wholesale prices in general in July were higher than at any time since February, 1921, and were 12 per cent higher than those of last January.

Stocks of merchant pig iron declined to the lowest point reached since September, 1920, being 245,000 gross tons at the end of July, compared with 702,000 tons one year previous. Receipts and shipments of both lead and zinc declined, though zinc production, at 63,854,000 lb., made a higher record than for any month since the close of 1920.

## PLANT OPERATIONS

### New England Manufacturers of Some Products Report Improvement

New England manufacturers of grinding machines are busier than they have been before this year, but not all of them are back on a normal basis. The demand for abrasive wheels, on the other hand, shows decided improvement. The Norton Co., Worcester, Mass., is employing 2100, of which 1850 are in the wheel division. In the recent business depression the number of employees was down to 1200. Abrasive wheel makers in Waltham, Mass., and at other New England points also are employing more people in an effort to keep up with incoming business.

Steel plants in the Cincinnati district are maintaining their customary schedules of operations, although the difficulties in the way of transportation are reported to be growing. The American Rolling Mill Co. is operating at capacity at both Middletown and Zanesville works, with the Ashland plant on a 50 per cent basis. The Andrews Steel Co., Newport, Ky., facing a shortage of basic iron, is nevertheless maintaining operations on a 70 per cent basis, while the Whitaker-Glessner Co. at Portsmouth is running at its schedule of last week, and from present indications will continue to do so for some time.

The Wilson Foundry & Machine Co., Pontiac, Mich., a subsidiary of the Willys-Overland Co., is advancing production of automobile engines to a basis of 300 complete motors daily.

The New Jersey Zinc Co., Palmerton, Pa., is increasing production to a capacity basis in practically all departments at its local plant, giving employment to a full working force on full-time schedule.

The American Car & Foundry Co., Berwick, Pa., has resumed operations at the puddle mill at its local plant, following a shut down for about a month. The finishing mill, also recently closed, has been reopened. A full working force will be employed.

E. I. du Pont de Nemours & Co., Wilmington, Del., are arranging for the resumption of production at its Ashburn Works, near Hannibal, Mo., used for high explosives. The mill has been closed for about a year past.

The Remington Typewriter Co., Syracuse, N. Y., has resumed operations at its local plant, following a two weeks' shut down. Manufacture of portable typewriters will be maintained on a basis of 1800 complete machines per week.

The J. G. Brill Co., Philadelphia, has increased production at its local car works to about 60 per cent of

Bituminous coal production in July was 5,000,000 tons less than in June. Compared with 1921, the accumulated deficit for seven months has reached 20,000,000 tons. The corresponding anthracite deficit reached almost 30,000,000 tons, production of 161,000 tons in July being only 2 per cent of normal. Gasoline production in June made a new high record, at 525,941,000 gal., more than 12,000,000 gal. above May—the previous high record.

Car loadings declined in July to an average of 828,029 per week, compared with 851,700 in June, most of the loss being in coal loadings. The number of surplus cars in good order July 31 was reported at 174,927, the lowest, except when a strike threatened last fall, since the end of 1920. Shortage of cars, at 24,973, was the highest since the end of 1920.

Building contracts let in July declined 9,000,000 sq. ft. from June, to 51,705,000 sq. ft., the lowest figure since April. The four months, however, constitute a high record of construction activity. Building costs continued to rise. Brick and lumber production declined, but cement made a new high record.

Cotton consumption in July was the lowest since one year ago. Consumption of raw silk and bank clearings also declined, due in part to seasonal influences.

capacity, as compared with a 50 per cent operating basis two months ago, and 25 per cent of normal the early part of the year.

The Hudson Motor Co., and the Essex Motor Co., Detroit, affiliated, have increased production to a basis of 300 complete automobiles per day, and will maintain this schedule for an indefinite period.

The Wallingford Steel Co., Wallingford, Conn., a new organization, capitalized at \$200,000, has completed the erection of a local plant and plans to commence operations by the close of the month. The works will be devoted to the production of cold rolled steel products.

The Kelly & Jones Co., Greensburg, Pa., manufacturer of valves, pipe, etc., has closed its plant temporarily owing to a strike of employees. The men have asked for an increased wage scale. The plant has been employing about 1400 operatives.

The United States Lock & Hardware Works, Columbia, Pa., is developing capacity operations at its plant, following a return to work of employees, recently out on strike.

The Willys-Overland Co., Toledo, Ohio, has established a production basis of 750 automobiles a day at its plants, about 175 of which are being equipped with Knight motors. Employment is being given to about 10,000 men.

The strike of laborers at the plant of the H. B. Smith Co., Westfield, Mass., heating appliances, has ended following a conference between the company officials, its employees and a business men's committee, recently formed to end the controversy. The strike was called May 1, as a result of an announcement of a reduction in wages. The molders' union was not involved in the dispute, but was thrown out of employment by the action of unskilled help. The plant employs something more than 1000 workers.

Production was recently started at the newly completed Youngstown plant of the Paul J. Kalman Co., Chicago, fabricating interest. It will manufacture steel reinforcing materials, largely for construction purposes. The company plans to erect an additional unit at the Youngstown plant next spring. Capacity of the plant is now about 100 tons daily.

Arundel Cotter's book, "United States Steel—a Corporation with a Soul," has been translated into Japanese and copies of the Japanese edition, which closely resemble in binding the last American edition, have been received in this country. All the illustrations accompanying the original text have been reproduced in the Japanese edition.



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# THE IRON AGE

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## The Advance in Steel Works Wages

The 20 per cent wage advance made by the Steel Corporation and in turn by the independent producers is not the result of prosperity that has come to the steel industry. The balance sheets of all steel companies for the first half of the year, especially those of the independent companies, few of which have earned dividends in that period, are sufficiently convincing on that point. Steel works common labor has been scarce since mid-spring and even on a 70 to 75 per cent operation in steel it has been difficult to maintain working forces, since other employments for common labor were paying more than 30 cents an hour. Four months ago it was recorded in these columns that in the Chicago district steel companies had had some difficulty in securing labor for some classes of work, and in the intervening weeks repeated references have been made in our market review to the higher labor costs that might have to be reckoned with as the year advanced. On May 25, three months ago, THE IRON AGE said: "There is no great hope in the steel industry of freight reductions sufficient to make a marked change in costs for 1922. On the other hand are the prospect of fairly high fuel and of possible labor shortage and higher wages."

Newspaper writers whose comments in the past week have treated the 20 per cent wage advance at steel works as a surprise, or as springing from some hidden motive, simply confess that they have not been alive to the labor situation as it has been developing in the past three months. There has been much shifting from one employment to another in that period, particularly in the Central West. What has happened at many plants, in the drawing of workers to higher priced jobs in automobile works at Detroit, is well known. No executives are better versed than those in the steel industry in the effect of the existing immigration act on the supply of "fetch-and-carry" labor, the kind that is in demand at steel works. The advance in common labor from 30 cents to 36 cents an hour simply recognized the fact that the supply of such labor has not been equal to the demand at some Central Western plants, and that public work and other outdoor employment had established a level which steel companies would have to meet.

The steel companies simply met the situation.

With non-union coal mines announcing advances averaging more than 40 per cent on the heels of the Cleveland agreement, there is little point to the criticism that the steel companies' 20 per cent advance was "unfortunate" on the eve of the hearing at Chicago in the case of the railroad maintenance of way workers. The steel companies did not do the choosing when some of their leading products went to a 1.30-cent basis last spring. Supply and demand did that, and steel company balances have been written in red at the same time that railroad car orders and steel building contracts have been putting large tonnages on rolling mill books. The steel trade, through no will of its own, was simply illustrating the old Carnegie maxim that the way to lift the market is to get under it. Prices went below the cost line, the mills grew busier, and better times would have been well on the way ere this but for the bitter conflicts in coal and transportation.

The effects on steel consumption of the "victory" of the union coal miners, the unavoidable advance in steel works wages, and the scarcity prices for fuel that will be a factor in iron and steel making costs for months are another story. Apart from war time, the country has never known a sustained demand for steel on a 2-cent market or anything approaching that level. To-day it is obvious that 2 cents for plates, shapes and bars would mean a loss for not a few of even the larger producers—companies whose statements for the third quarter of the year will show that again they have failed of making a profit. And after railroad work and building and oil development and automobile manufacture have been stimulated by 1.30-cent steel, how far can the stimulation be carried with steel prices \$15 to \$20 a ton higher?

The steady foreign demand for American copper is still a prominent feature of our export trade. Its magnitude is a surprise even to those in closest touch with events in copper. The statistics show that shipments abroad for the fiscal year ending with June exceeded all post-war records, even the heavy movement in 1921. The actual figures are 677,487,300 pounds as compared with 596,117,247 pounds in the calendar year 1921. A continuing surprise is the heavy buying by Germany, despite the fall of the mark to a line's width from zero. At



33.7 per cent of the total, exports to Germany exceed even the large buying in 1913 when stocks were being accumulated for war. Buying by France is also unprecedented at 16.6 per cent of the total. And in the last six months Japan has increased her takings to 13 per cent of the total, against 9.9 per cent in 1921. All these records are significant of the well-nigh indispensable place of the ancient metal in the world's work and also of its historic capacity for doing the unexpected.

### Steel Capacity and Orders

In the annual statistical report of the American Iron and Steel Institute, issued recently, information is given as to rated capacity of steel works. The ingot capacity—disregarding castings—is as follows for Dec. 31, 1921, in gross tons per annum:

Open-hearth .....	42,066,110
Bessemer .....	12,830,400
Crucible .....	189,380
Electric .....	731,395
Miscellaneous .....	400
Total .....	55,817,685

The question is what allowance should be made for possible excess rating, to determine the practical capacity. Actual experience alone can be the guide. The last year in which there was full operation was 1916, ingot production being 41,401,917 tons. The compiled capacity was 43,822,600 tons at the beginning and 47,585,395 tons at the end of the year. Taking the mean of these as representing the average during the year and dividing into the actual production gives 91 per cent, as the relation of output to compiled capacity. As a check on this conclusion the experience of 1913 may be taken. It was commonly taken then that production was about 90 per cent of full operation. The statistical report did not give capacity at the beginning of 1913 but gave 37,933,475 tons for capacity at the close. The Annual Review Number of THE IRON AGE, Jan. 1, 1914, gave the new capacity completed during the year at 2,900,000 tons. Deducting one-half of this gives 36,500,000 tons as the average rated capacity during the year. Production was 30,280,130 tons. Assuming that this was 90 per cent of what would have been made if orders had not begun playing out in the late months of the year, the actual capacity averaged 33,600,000 tons during the year, which is 92 per cent of the compiled capacity, this agreeing quite well with the factor of 91 per cent found by the experience of 1916.

Applying the 92 per cent factor to the compiled capacity at the beginning of the present year gives 51,350,000 tons, and applying 91 per cent gives 50,750,000 tons as the actual practical capacity.

It is, however, well recognized that in present circumstances the steel industry, no matter how well supplied with orders, cannot produce 50,000,000 tons of ingots in a year. That is, it cannot function as it did function in 1916 and in 1913, or, it may be added, in practically all its history prior to half a dozen years ago. In the first nine months of 1920 the industry strained every nerve to produce, yet made ingots only at the rate of about 42,000,000 tons a year. It was hampered, at one time or another, by fuel shortage, labor shortage, labor inefficiency and transportation shortage.

It is not a gratifying situation. It is a new thing for the steel industry to be unable to operate freely when it has the orders. Until six years ago the industry had only two troubles, more or less recurrent—inability to sell steel up to its capacity and inability to obtain remunerative prices. When demand was equal to capacity fair prices were obtained and the good years evened up for the bad years. We are in a new era. Before the war a 50 per cent operation was considered almost indescribably bad, profits being quite impossible. Now the industry is operating at but little more than 50 per cent, and prices are mounting rapidly.

### Verging on Revolution

Governor Miller of New York is a man of courage, a man of conviction and he knows how to use the English language. In his message to the special session of the Legislature, last Monday evening, he painted a vivid picture of the pending industrial disputes, which, he said, are impairing transportation and the production of both anthracite and bituminous coal, and threatening the paralysis of industry as well as widespread distress next winter from shortage of domestic fuel. Then the Governor added:

A nation-wide industrial dispute involving essential industries verges on revolution, and in fact is the method advocated by those who plot revolution, of whom there are still, unfortunately, too many in this country. Such a dispute, irrespective of its merits, is revolutionary because it subordinates the general interest to the selfish interests of a few. It is subversive of free government because it subjects all the people to the tyranny of a few, and a Government established to promote the general welfare cannot tolerate the tyranny of any interest, group or individual and endure.

These are strong words and should cause every patriotic American, not only of the State of New York but throughout the Union, to stop and think. They should appeal especially to well-meaning people who in the past have been apologists for men like William Z. Foster. The New York Times, speaking of the new charges against Foster, observes that "the evidence to be presented would be of interest to the committee of nine clergymen, including three bishops, who gave the authority of their names to the Interchurch World report on the steel strike, which—though with somewhat greater subtlety and address—glossed over Foster's past and that of his fellow-organizer, John Fitzpatrick."

Then the Times calls attention to the little red book, "The Syndicalist," an almost forgotten revolutionary pamphlet written by Foster and another radical, dug up in September, 1919, by THE IRON AGE, which published liberal extracts showing Foster's revolutionary teachings. Foster did not then repudiate his extreme views, and only recently, in a friendly periodical, he asserts that the American working class is not moving fast enough, declaring that what is needed in this country is to adopt methods used in foreign countries—above all to arouse the militants to stop the open shop drive. "The fate of the American labor movement," said Foster, "depends upon whether or not the militants and others in the ranks arouse themselves to action."

It is high time for the people in this country,

whether heretofore they have been apologists for the radicals or not, to aline themselves against the militants, within and without the unions.

British steel industry is contingent upon a marked stimulation of shipbuilding.

### Uneven Tax Burdens

According to a statement made public Aug. 27 by the United States Commissioner of Internal Revenue, residents of New York State paid 25 per cent of the total of all taxes collected by his office and 25 per cent of the total income and profits taxes, during the fiscal year 1922. Details from the statement show that New York, New England, New Jersey and Pennsylvania paid income and profits taxes amounting to \$1,039,088,000, against \$1,033,912,000 for the other 39 States and the District of Columbia. The respective populations, 1920 census, were 29,662,000 and 76,049,000. The tax collections per head were \$35.03 and \$13.60—nearly three to one.

Apportionment of taxes is supposed to bear some relationship to opulence. So is the ownership of automobiles. But the nine States which paid more than half of the tax had, in 1921, only 2,484,360 automobiles; the others had 8,021,300. The amount of tax collected from the nine States, per automobile registered in them, was \$418; from the other States, \$129. This ratio is 3.24 to one—yet the taxes were one to one. New York paid \$653 in income and profits taxes for each registered automobile.

All of this goes to emphasize how onerous and unevenly distributed are our present income and profits taxes. They are so adjusted that they tax initiative, hamper industry and put a burden on those whose efforts toward better and more stable business might otherwise bear good fruit. The most heavily taxed regions are those, normally, of greatest and intensest activity—those of concentrated manufacture and of congested population. The question may well be raised whether a taxing policy is wise that puts special hobbles on enterprise and productiveness.

It was estimated in 1917 by a British Governmental agency that 30 per cent of the total consumption of steel in Great Britain before the war was used in shipping and marine engineering. Special interest therefore attaches to the reports of Lloyd's register as to the tonnage of ships under construction and the effect on the British steel industry. These reports for the second quarter help to explain why the present rate of British steel production is only 45 per cent of estimated capacity. For the quarter ended June 30, vessels under construction represented about 1,438,500 tons. The quarterly average in the twelve months immediately preceding the war was 1,890,000 tons, so that operations are now at 451,000 tons less than the average before the war. In the second quarter of 1920 the average tonnage of vessels under construction was 3,578,153, and even so recently as the end of the first quarter last year the figure was 3,798,593 tons. The shrinkage since then has been over 50 per cent. In 1920 the steel output was nearly three times the present rate. It is clear, therefore, that a revival in the

### Creative Intelligence Hampered

Computations are made from time to time of the loss involved in labor disputes, and the figures are always impressive, as of course they are intended to be. Some of the assumptions might be questioned on the basis that perhaps some of the "loss" can be made up later. There is one loss that is rarely mentioned, yet it very important and it is permanent. That is the loss of exercise of creative intelligence due to men being busied with industrial disputes, and in fact the whole matter of the relation of employer and employed.

The great source of wealth or of prosperity is not labor or capital *per se*. The workman may work hard, may perspire copiously and thoroughly exhaust himself day by day and yet not prosper or produce wealth. Capital may stand at the call of any one, at low interest rates, yet not be employable in a way to produce wealth. Capital furnishes the tools and workmen use the tools. The tool may be a pneumatic riveter, a steam shovel or a blast furnace. The net result of the use of the tool, however the division of the proceeds may be between capital and labor, depends on the efficiency of the tool, and it is creative intelligence that makes the tool efficient.

When the brains of the country must be directed to the solution of strike questions and industrial unrest, when a first duty of the manager of an enterprise is to determine, for example, how much stock of each raw material he must carry as insurance against shortage from strikes, creative intelligence is hampered. The loss thus produced is not only to the individual enterprise but to society at large. If an improved turret lathe is brought into use, the profits fall not alone to the producer. The users, collectively, probably make much more money out of it than the producer, and the customers of the machine shop are benefited also.

But the loss through men being deprived of time and energy that might otherwise be devoted to the exercise of the inventive faculty is not all of the loss caused by labor disputes and the mental attitude that gives rise to them. The exercise of creative intelligence is hampered by doubt whether a new tool or device or process would work advantageously with labor in its present frame of mind. The one who would create must think not only of the intrinsic value of the new thing, but the value, perhaps limited, it would have in future with labor conditions as they may come to be. In the light of this fact it is not difficult to understand the slow development of the molding machine in its earlier history, before it was settled that it would not be under labor union control.

It was due chiefly to improvements resulting from the exercise of creative intelligence that the purchasing power of a week's earnings of workmen tripled in somewhat less than a hundred years preceding the world war. So closely is all prosperity related to the fruits of creative intelligence that the hampering influence of labor conditions should impress every one and encourage every effort for their improvement.



# President Opposed to Taking Drastic Action

White House Policy Clearly Indicated—Secretary Hoover  
Disappointed by Attitude of Henry Ford, and  
Hopes Plant Will Not Close

WASHINGTON, Aug. 29.—Considering that the bituminous coal situation actually is cleared up and that there is strong hope for an early settlement of the anthracite strike, the Administration now is centering its attention on the railroad problem. It was stated to-day at the White House that the President is firmly convinced that Congress should give him authority at once to take over the railroads and coal mines, but at the same time exercise of such authority would be avoided, if possible, and resorted to only in case of the gravest necessity in the interest of the public. The attitude of the President is represented to be that he does not think there is any existing reason to turn to this drastic measure, but that power to do so should be given him if the occasion demands it. It would not be adopted with the view of settling labor trouble. Rather it would be used as a means to insure control over the lines so as to provide the necessary distribution of coal and other necessities. It is declared that the President feels he already has power to take over the mines and railroads, but that direct and actual authority should be granted through specific legislation. The power would be directed at proper transportation and not as a means to insure production of coal, confidence being expressed that in view of the settlements brought about and pending, coal production soon will be proceeding at a normal rate.

While the seizure of railroads and coal mines is altogether unlikely, this is especially so with regard to the mines, and Secretary Hoover said this morning that the taking over of the latter is not even contemplated. Sentiment in Congress over granting authority to the President to take over either the carriers or mines is divided, with opposition to the plan growing and it is quite possible that the authority sought by the President will not be granted.

## Congress Is Conservative

To indicate that its attitude toward drastic action in the labor situation is cooling, Congress has definitely abandoned the proposal of the President to establish a Federal coal agency for the purchase, sale and distribution of fuel, according to an announcement by Chairman Winslow, of the House committee on Interstate and Foreign Commerce. Resumption of coal mining is assigned as the reason for the change in the attitude of the committee, whose action is said to have been acquiesced in by the President.

## The Ford Announcement

The announcement of Henry Ford that he will close his plants on Sept. 16, throwing 105,000 men out of employment, has been a source of disappointment to Secretary Hoover. The Secretary said he hoped Mr. Ford will not feel constrained to take such sweeping action because he thinks the prices of coal are too high. It is felt that legislation under way will control the price situation sufficiently to assure Mr. Ford that coal can be obtained at reasonable figures. It was declared that Mr. Ford uses 3800 tons of coal daily, and produces approximately 5200 cars in a day. Even if he pays \$2 a ton more for coal than the \$4.50 price, it was stated the added production cost of a Ford car would be not more than \$1.50.

One reason for the view taken of Mr. Ford's action is not the single move proposed at the Ford plant, important as it is, but the fact that it might be accepted as an indication of far-reaching and serious consequences. Thought was given to its establishing a precedent for other important industrial employers and consumers that would slacken production in the iron and steel and many allied lines, develop much unemployment during the winter and cause general distress throughout the country. On the other hand, the Administration plainly is hoping that the coal and rail strikes, inevitable causes of rising costs and prices, will not develop a period of wild inflation, such as occurred in 1920, followed by sharp and demoralizing liquidation.

## Important Order Issued

WASHINGTON, Aug. 29.—Marked improvement in the bituminous coal situation is reflected in an order issued this afternoon by the Interstate Commerce Commission by which it eliminated classifications four and five in its priority list. Included in the fifth classification are the iron and steel, lumber and allied lines. They now automatically come under class three, which is the lowest. Reports already have reached Washington that the greater freedom of coal for the market has indicated that softer prices are in immediate prospect which may go well under those named by the Government. The probable effect of this order is an increase in the output of industries, including iron and steel and lumber. In its announcement the Interstate Commerce Commission said that the increase in production of bituminous coal and the opening of fields recently closed, near to important markets, have made it possible to rearrange the list of priority uses embraced in service order No. 23 as previously amended, but by the amendment, to-day the emergency uses are all embraced in class two. Class one is reserved for such cases as may be designated from time to time by the commission. All other uses fall within class three. Certain pressing needs of the railroads and of the portion of the Northwest which must practically be served by water before the close of navigation will be met by proper assignment of particular shipments to class one. Certificates from State fuel administrators or committees as to the character of use and the bona fides of the transaction will be deemed sufficient evidence for the railroads in carrying out the direction for priority as to coal for domestic and building heating purposes, as well as other evidence of the right of a particular shipment to be placed within the priority class.

Removal of the fourth and fifth classes more than meets the recent request of the Associated Contractors of America, who asked the commission to dispense with class five as superfluous. The purpose of the request was to expedite transportation of building materials and to afford coal for those engaged in their production.

The order of the commission has resulted in a much more optimistic tone in the fuel situation and is expected to bring early relief to industries of the country by reason of its being based on increased coal production.

No. 1 furnace, Shenango Furnace Co., Sharpsville, Pa., resumed operations Aug. 29 after being banked since the latter part of July.

## REFRACTORIES ADVANCE

### Prices Marked Up on Account of Higher Cost of Mining Coal

PITTSBURGH, Aug. 29.—Effective Aug. 23, leading makers of refractories advanced prices of fire clay brick \$5 per 1000, ground fire clay \$1 per ton, silica brick \$7 per 1000, ground silica clay \$1 per ton, magnesite brick \$4 per 100, grain magnesite \$2 per ton and chrome brick \$3 per 1000. There is only one explanation and that is the virtual settlement of the coal strike on the terms of the strikers, which involves the restoration of the peak wages in the coal mines and puts a heavy increase in the producing costs of the manufacturers. Makers of fire clay and silica brick could not advance wages to the coal miners without also adjusting those of the clay miners and the brick plant workmen and as a result of the increases it is estimated that producing costs have advanced fully 30 per cent as compared with those prior to Aug. 23.

While the new prices have not yet found basis in sales, due to the fact that most manufacturers have rather sizable orders on their books carrying lower prices, which are not affected by the advance, the present quotations are declared to be only tentative and are likely to be further advanced if demands are such as to force manufacturers into the labor market. Penn-

sylvanians makers are finding it hard to secure a sufficient supply of common labor in competition with other industries, and because of that situation they are inclined to give protection on prices very far ahead. Forward business will be taken only on a basis of prices in effect at time of shipment, as it is asserted that even present prices would not show a fair profit if there were any further increase in labor costs.

The new price of Birmingham silica brick has not yet been announced. The leading producer in that district has withdrawn its most recent quotation of \$43, but has not yet decided on a new price.

We quote per 1000, f.o.b. works:

Fire clay	High Duty	Moderate Duty
Pennsylvania .....	\$40.00 to \$43.00	\$36.00 to \$40.00
Ohio .....	40.00 to 43.00	36.00 to 40.00
Kentucky .....	40.00 to 43.00	35.00 to 39.00
Illinois .....	40.00 to 42.00	37.00 to 39.00
Missouri .....	40.00 to 42.00	35.00 to 39.00
Ground fire clay, per net ton		7.00 to 8.00
Silica brick:		
Pennsylvania .....		45.00
Chicago .....		53.00
Birmingham .....		Nominal
Ground silica clay, per net ton		9.00
Magnesite brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.) .....		60.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.) .....		32.00
Chrome brick:		
Standard size, per net ton		45.00

## WIRE CLOTH MERGER

### Wickwire-Spencer Steel Corporation Acquires American Wire Fabrics Co.

WORCESTER, MASS., Aug. 29.—The Wickwire-Spencer Steel Corporation, Worcester and Buffalo, has acquired the American Wire Fabrics Co., Blue Island, Ill., and Mount Wolf, Pa., manufacturer of wire cloth. The price paid is nearly \$4,000,000. The purchase has been approved by the directors of the Wickwire-Spencer company and final action will be taken at a meeting of the stockholders called for Worcester, Sept. 8. The transaction will involve various changes in the capitalization of the Wickwire-Spencer corporation, including \$1,775,000 of ten-year secured convertible 7½ per cent notes, retiring the class A common shares and increasing the common stock from 250,000 shares to 600,000 shares.

The American Wire Fabrics Co. was organized in 1911 through the consolidation of the American Wire Cloth Co., Clinton, Iowa, the National Wire Cloth Co., Niles, Mich., the New Freedom Wire Cloth Co., New Freedom, Pa., and the Pennsylvania Wire Cloth Co., Mount Wolf, Pa. The products of the company's plants are similar to those of the wire cloth company departments of the Wright & Clinton works of the Wickwire-Spencer company. The American Wire Fabrics Co. will retain its corporate identity. It is now an Iowa corporation and will change to a Delaware charter.

## Railroad Car and Locomotive Buying

Orders for 100 locomotives have been placed in the last week and activity in car repair orders and inquiries continues. New car orders are light:

The Louisville & Nashville has ordered 30 Mikado locomotives from the American Locomotive Co.

The Missouri, Kansas & Texas has ordered 45 locomotives from the Lima Locomotive Co. and 10 switching from the American Locomotive Co.

The Illinois Central has awarded 15 locomotives to the Baldwin Locomotive Works.

The Missouri Pacific is in the market for 25 Mikado locomotives.

The Pacific Electric is in the market for 200 dump cars.

The Chicago & North Western is inquiring for repairs on 1000 gondola cars.

The Pere Marquette is in the market for repairs on 1000 box cars.

The Santa Fe has ordered 8 buffet library cars from the Pullman Co.

The Monon has placed 4 passenger cars with the Pullman Co.

The Chicago & Eastern Illinois is inquiring for 17 baggage cars.

The Washburn Lignite Coal Co., Wilton, N. D., is inquiring for 75 steel mine cars.

The Municipal Railway of San Francisco is in the market for 40 part steel street cars.

The Erie is inquiring for 100 steel underframes.

The Lehigh & New England for 100 gondola cars.

The New York Central is having repairs made to 50 locomotives at the shops of the Rome Locomotive Works.

The Central Railroad of New Jersey is having 200 steel hopper cars repaired by the Pressed Steel Car Co.

The Philadelphia & Reading has ordered 100 refrigerator cars from the American Car & Foundry Co.

## Sheet Sales Drop

The monthly report of the National Association of Sheet and Tin Plate Manufacturers to the Bureau of the Census, Department of Commerce, for the month of July, discloses conditions quite the reverse of those for June. Sales of members of the association who reported were 143,563 net tons, this total representing only 58.2 per cent of the monthly capacity of the association membership. June sales were 268,032 net tons or 110 per cent of the monthly capacity. Production exceeded the sales by 35,537 tons and shipments were 37,818 tons in excess of the new bookings. In June the sales exceeded production by almost 58,000 tons and the shipments by 65,000 tons, resulting in an increase in unfilled tonnages. The latter item decreased in July, and Aug. 1 found the mills with orders equal to 1663 months' capacity as compared with bookings equivalent to 1797 months' capacity on July 1. Stocks on hand waiting shipment on Aug. 1 were 82,053, an increase of 4802 tons as compared with a month before, but unsold stocks in July were reduced 2591 tons. Deducting stocks awaiting shipment and the unsold stocks, the net obligations of the mills as of Aug. 1 were 308,246 tons as compared with 338,425 on July 1.

The July report compares with that for June as follows:

	July		June	
	Net Tons	Per Cent Capacity	Net Tons	Per Cent Capacity
Total sales.....	143,563	58.2	268,032	110.0
Total production...	179,100	72.7	210,460	84.4
Total shipments...	181,381	73.6	203,023	83.3
Unfilled tonnage...	409,885	166.3	437,853	179.7
Stock to be shipped	82,053	33.2	77,251	31.7
Stock unsold .....	19,586	8.0	22,177	8.8

The total number of hot mills in the United States is 641, having a monthly capacity of approximately 365,000 tons and the percentage of the capacity to which the above figures are related is 67 per cent.



## FABRICATED STEEL BUSINESS

Bridge and Building Awards and Tonnages  
Pending at Leading Centers

Awards for fabricated steel work for the past week include the following:

Building for a gas company, Baltimore, 1000 tons, to the Belmont Iron Works.  
Manufacturing building, Ansonia, Conn., 250 tons, to the American Bridge Co.  
Loft building, Thirty-third Street, New York, 300 tons, to the Paterson Bridge Co.  
Highway bridge, Saratoga Springs, N. Y., 500 tons, to the American Bridge Co.  
Mill building, Holyoke, Mass., 1100 tons, to the Shoemaker-Satterthwaite Bridge Co.  
Building, Philadelphia Trust Co., 200 tons, to the Keystone Structural Co.  
New mechanical puddling plant for Youngstown Steel Co., Warren, Ohio, 2000 tons, to American Bridge Co.  
Public Service Co. of Northern Illinois, power station, Waukegan, Ill., 2100 tons, to Milwaukee Bridge Co.  
Building, Hardie Brothers Co., Pittsburgh, 2200 tons, to American Bridge Co.  
National Enameling & Stamping Co., sheet mill addition, Granite City, Ill., 1500 tons, to Mississippi Valley Structural Steel Co.  
Vaults and repairs, Union Trust Co., Union Arcade, Pittsburgh, 750 tons, to American Bridge Co.  
Buildings, Western Reserve University, Cleveland, 775 tons, to American Bridge Co.  
Louisiana & Arkansas Railway Co. shops, Stamps, Ark., 711 tons, to unnamed fabricator.  
South Park Commissioners, field house, Chicago, 300 tons, to A. Bolter's Sons.  
Highway viaduct, Dubuque County, Iowa, 246 tons, to Pittsburgh-Des Moines Steel Co.  
Boiler house, Peshtigo (Wis.) Paper Co., 100 tons, to Worden-Allen Co.  
Illinois State Penitentiary Commission, dining hall at Lockport, 150 tons, to Milwaukee Bridge Co.  
Coaling station for Union Pacific system, Carter, Wyo., 145 tons, to unnamed fabricator.  
Shelter shed for wagon yard, St. Louis, the Supply Commission, City of St. Louis, 147 tons, to Stupp Brothers.  
Exchange National Bank Building, Tulsa, Okla., 250 tons, to Kansas City Structural Steel Co.  
Spring Street viaduct, Atlanta, Ga., 1200 tons, Virginia Bridge Co., low bidder.  
Addition to plant of Gardner-Harvey Paper Co., Middletown, Ohio, 300 tons, to Bellefontaine Bridge Co.  
Four-story office building of Chamber of Commerce of United States, Connecticut Avenue and H Street, N. W., Washington, D. C., 1800 tons, to American Bridge Co.  
National Bank building, Baltimore, 300 tons, to Dietrich Bros.  
Bolton Square Apartment, Cleveland, 700 tons, to the Forest City Iron & Steel Co.  
New York Central subway work at Elyria, Ohio, 120 tons, to the McClintic-Marshall Co.

## Structural Projects Pending

Inquiries for fabricated steel work which may be added to lists of pending projects include the following:

Power house for the State of New York, Crescent, N. Y., 200 tons.  
Highway bridge, Norfolk, Va., 500 tons.  
Federal building, Manville, R. I., 200 tons.  
Three manufacturing buildings for Lockwood Greene & Co., 300 tons.  
Julia Richmond High School, 1600 tons.  
Factory building for Fay & Egan Co., Cincinnati, 900 tons, bids close Sept. 11 with Clifford Stegner, architect, 1700 Union Trust Building, Cincinnati.  
Addition to office building, United Brethren, Dayton, Ohio, approximately 1000 tons. Plans prepared and bids to be taken shortly.  
Stadium at University of Illinois, Champaign, Ill., 500 tons of steel and 1000 tons of reinforcing bars (estimated), general contract reported to be awarded to Chicago contractors.  
Large garage for Consolidated Gas & Electric Light Co., Baltimore, 800 tons.  
South Side High School, St. Louis, 300 tons.  
Collinwood High School, Cleveland, 1500 tons. Bids to be taken Sept. 18.  
Feldman Apartment, Detroit, 500 tons.  
Commodore Perry Building, Toledo, 1000 tons.

Dr. George B. Waterhouse Accepts Chair of  
Metallurgy at M. I. T.

Dr. George B. Waterhouse, for the past 16 years connected with the Lackawanna Steel Co., Buffalo, N. Y., has accepted the appointment as head of the department of metallurgy at the Massachusetts Institute of Technology, Boston, and will assume his new duties at the beginning of the college year this fall.



DR. GEORGE B. WATERHOUSE

Doctor Waterhouse will take to his new work a broad practical experience in metallurgy, fortified by a liberal education. He was born on May 25, 1883, and received his early education in Great Britain. Five years of his university training were spent in England, the greater part of which was at the University of Sheffield under Professors J. O. Arnold and Andrew McWilliam. In the United States he had three years at Columbia University under Dr. Henry M. Howe and Bradley Stoughton. Since 1906 he has been with the Lackawanna Steel Co. as metallographist and metallurgist and for the last few years as metallurgical and inspecting engineer. In this work his theoretical training has been broadened by practical experience, especially in the making and working of steel. At the same time he has kept in close touch with developments in this and other countries and has paid particular attention to the work of French and German investigators. His intimate knowledge of the French and German languages has been no small factor in these later studies and in his translated abstracts for THE IRON AGE, which have been a feature in these columns for a number of years.

He is a member of the American Iron and Steel Institute, the Iron and Steel Institute (British), the American Institute of Mining and Metallurgical Engineers, and the American Society for Testing Materials. To most of these societies he has contributed papers and discussions. In the work of the American Association of Steel Manufacturers he has been a regular participant.

Doctor Waterhouse succeeds Prof. H. O. Hofman, who resigned last June as head of the department at the Boston institution, after many years of service. The new appointment represents a change, in that Professor Hofman has been known particularly in connection with non-ferrous metallurgy, whereas the new appointee's life work has been in the metallurgy of iron and steel.

General Advance of 20 Per Cent in Wages  
of Steel Workers

Since the announcement of the advance of 20 per cent in wages of steel workers by the United States Steel Corporation, advances by independent companies have become general. In some cases, independents had made advances previous to the Steel Corporation announcement, as, for example, the Replogle Steel Co. made an advance of 2c. per hr. July 1. In these cases, advances to bring the scale up to the Steel Corporation schedule have been made. The advance made by operators of Alabama coal mines is 20 per cent and applies to 27,000 men. The usual form of notice posted by independent companies is the same as that of the Steel Corporation constituents, 20 per cent for all day labor and equitable adjustment in wages of all other classes.

# Iron and Steel Markets

## SEE HIGHER PRICES

### Steel Producers Make Advances But Do Little Selling

#### Better Promise of Fuel But Coke Region Workers Are Still Out—Steel Corporation Prices

A flood of price advances, covering nearly the whole range of iron and steel products from pig iron to nuts and bolts, has followed the wage advances at steel works and at non-union mines. Little steel has been booked at these higher prices, as few producers can promise deliveries, and most of them see further advances later in the year.

To add to the confusion, promises of increase in soft coal production have gone out from Washington, pointing to a more rapid improvement in industry than is indicated in steel. The wiping out of the fourth and fifth classes in the priority scheme of the Commerce Commission, leaving steel in the third but still the last class, is looked on as making no important change. Transportation is to-day, as it has been for weeks, the chief hampering factor.

Thus far the wage advances of 40 per cent and more by non-union mines in the Connellsville region have not brought back the workers and production in this important coke center is still restricted. The attempt to unionize these mines may prolong the idleness of blast furnaces dependent on Connellsville coke.

It is not yet clear how far the 20 per cent advance in steel works wages will relieve the shortage in common labor. That factor is more important in any reckoning as to steel supply in the remainder of the year than is commonly appreciated.

While the Steel Corporation refrains from making price announcements, it has made some late advances. On Aug. 23 it followed an independent producer of standard pipe going up \$6 on black and \$4 on galvanized, with a \$6 advance on oil country goods. On wire products it has gone up \$4 per ton to the new independent level of \$2.60 per keg for wire nails and to \$2.35 per 100 lb. for plain wire, an advance of \$2 per ton.

Some independent producers of sheets indicate that their prices for fourth quarter will be considerably above those of the Steel Corporation. Also on bars, plates and shapes, independent prices take a wide range, as high as 2.50c. being asked for plates.

Railroad buying goes on apace. At Chicago three important trunk lines have entered the rail market with inquiries for 1923 amounting to 60,000 tons. It is quite certain that the price will be above the \$40 level of 1922, but how far has not yet developed. The week's orders for new locomotives total 100.

New structural steel orders aggregate about 15,000 tons. Of this 2000 tons is for the new mechanical puddling mill of the Youngstown Steel Co. and 1500 tons for a sheet mill addition at the National Enameling & Stamping Co.'s plant.

Considerable new business is offered in plates. Lake Erie shipyards have inquiries for three boats which will take 15,000 tons of steel. Ohio tank shops are figuring on contracts calling for 6500 tons of plates.

The announced purpose to shut down the Ford plant is not accepted as a finality, in view of official assurance from Washington that Detroit industries will get fuel before Sept. 16 and at reasonable prices. However, orders to hold up shipments of Ford materials after Sept. 5 have gone out and have affected several steel plants, sheet mills, manufacturers of forgings and others.

Heavy buying of foreign pig iron has continued in the New York district, where orders for about 40,000 tons were placed, and in other Eastern centers. Seaboard prices on imports are several dollars below those quoted on domestic iron, of which the tonnage obtainable is very limited. One feature of the domestic market has been the shipping of iron long distances. The furnace at Granite City, Ill., has been shipping to Wisconsin, western Pennsylvania, Ohio and Indiana, while Canadian iron has come into Northern States. The Birmingham market has advanced rapidly and as high as \$25 has been paid for spot shipment. At Cincinnati and Cleveland, foundry grades have been marked up \$3, but the upward trend has halted in Chicago. At Pittsburgh, the market has come to a standstill because virtually no iron is to be had.

THE IRON AGE composite price for finished steel remains at 2.412c. per lb., as last week. This is the highest it has been since July 12, 1921. At the beginning of last January it was 2.062c.

Pig iron has advanced to \$29.52 from \$26.86 last week. This is the highest point reached by THE IRON AGE pig iron composite price since the \$29.93 of Feb. 8, 1921.

## Pittsburgh

### Continued Curtailment of Steel Production — Little Pig Iron Business

PITTSBURGH, Aug. 29.—The iron and steel industry in this district as yet has made no decided response to the virtual conclusion of the coal strike in the union field, but, on the contrary, appears to have lost additional ground in the matter of steel production, due to the fact that the strike in the hitherto non-union coal districts has not been settled by the recent restoration of peak wage scales and also because the shortage of labor in the steel mills still is unrelieved.

Expectations that the big wage increase would bring the men back to work in the Connellsville district and thus make for a somewhat easier fuel situation for so many of the steel company and blast furnace interests in this and nearby districts, have not been fulfilled. The fuel situation both as regards coal and coke is slightly easier, but not to an extent that makes possible the putting on of additional furnaces or steel plants. Some steel companies will be helped by the resumption of idle union mines, but already the matter of car supplies is bothersome and the fear is expressed that when steel production is increased, difficulty will be encountered in securing a sufficient number of cars to move the finished product. Desire of buyers to get a place on mill books



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 29, 1922	Aug. 22, 1922	Aug. 1, 1922	Aug. 30, 1921
No. 28, Philadelphia...	<b>\$34.14</b>	\$33.14	\$29.76	\$20.84
No. 28, Valley furnace...	33.00	33.00	28.00	21.00
No. 28, Southern, Cin'tit...	<b>27.05</b>	24.05	22.55	23.50
No. 28, Birmingham, Ala...	<b>23.00</b>	20.00	18.50	19.00
No. 28, foundry, Chicago...	30.00	30.00	26.00	21.00
Basic, del'd, eastern Pa...	28.64	28.64	27.25	19.00
Basic, Valley furnace...	<b>30.00</b>	26.00	25.00	19.00
Valley Bess., del. Pitts...	<b>33.76</b>	31.76	26.76	21.96
Malleable, Chicago...	30.00	30.00	26.00	21.00
Malleable, Valley...	<b>33.00</b>	31.50	27.00	20.00
Gray forge, Pittsburgh...	34.76	34.76	27.76	21.96
L. S. charcoal, Chicago...	<b>36.15</b>	34.65	33.15	33.50
Perronanganese, seaboard	67.50	67.50	67.50	70.00

Rails, Billets, etc., Per Gross Ton:	Aug. 29, 1922	Aug. 22, 1922	Aug. 1, 1922	Aug. 30, 1921
O.-h. rails, heavy, at mill	\$40.00	\$40.00	\$40.00	\$47.00
Bess. billets, Pittsburgh...	<b>38.00</b>	37.50	35.00	29.00
O.-h. billets, Pittsburgh...	<b>38.00</b>	37.50	35.00	29.00
O.-h. sheet bars, P'gh...	<b>38.00</b>	37.50	35.00	30.00
Forging billets, base, P'gh	43.00	43.00	40.00	34.00
O.-h. billets, Phila...	<b>45.17</b>	42.67	40.17	35.74
Wire rods, Pittsburgh...	45.00	45.00	40.00	40.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	2.00	2.00	1.70	1.75
Light rails at mill...	<b>2.00</b>	1.90	1.75	1.75

Finished Iron and Steel, Per Lb. to Large Buyers:	Aug. 29, 1922	Aug. 22, 1922	Aug. 1, 1922	Aug. 30, 1921
Iron bars, Philadelphia...	2.325	2.325	2.025	2.00
Iron bars, Chicago...	<b>2.25</b>	2.15	2.00	1.75
Steel bars, Pittsburgh...	2.00	2.00	1.70	1.70
Steel bars, Chicago...	2.35	2.35	1.75	2.08
Steel bars, New York...	2.34	2.34	2.04	2.08
Tank plates, Pittsburgh...	2.00	2.00	1.70	1.70
Tank plates, Chicago...	2.20	2.20	1.75	2.00
Tank plates, New York...	2.34	2.34	2.04	2.08
Beams, Pittsburgh...	2.00	2.00	1.70	1.75
Beams, Chicago...	2.35	2.35	1.75	1.85
Beams, New York...	2.34	2.34	2.04	2.13
Steel hoops, Pittsburgh...	2.75	2.75	2.50	2.25

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Aug. 29, 1922	Aug. 22, 1922	Aug. 1, 1922	Aug. 30, 1921
	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.35	3.35	3.15	2.75
Sheets, galv., No. 28, P'gh	4.35	4.35	4.15	3.75
Sheets, blue an'd, 9 & 10	2.50	2.50	2.40	2.25
Wire nails, Pittsburgh...	2.60	2.60	2.40	2.75
Plain wire, Pittsburgh...	2.35	2.35	2.25	2.50
Barbed wire, galv., P'gh...	3.15	3.15	3.05	3.40
Tin plate, 100-lb. box, P'gh	\$4.75	\$4.75	\$4.75	\$5.25

Old Materials, Per Gross Ton:

Carwheels, Chicago	\$22.50	\$21.00	\$19.50	\$13.75
Carwheels, Philadelphia...	19.00	19.00	17.50	17.00
Heavy steel scrap, P'gh...	<b>18.50</b>	18.25	17.00	13.00
Heavy steel scrap, Phila...	15.50	15.50	15.00	11.50
Heavy steel scrap, Ch'go...	<b>17.00</b>	16.00	15.50	11.00
No. 1 cast, Pittsburgh...	19.00	19.00	19.00	16.50
No. 1 cast, Philadelphia...	19.00	19.00	18.00	17.00
No. 1 cast, Ch'go (net ton)	<b>20.00</b>	19.50	17.00	13.00
No. 1 RR. wrot, Phila...	18.50	18.50	17.50	14.00
No. 1 RR. wrot, Ch'go (net)	<b>15.50</b>	15.25	14.25	11.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt...	\$10.00	\$12.00	\$14.00	\$3.00
Foundry coke, prompt...	12.00	13.00	14.50	4.00

Metals,

Per Lb. to Large Buyers:	Aug. 29, 1922	Aug. 22, 1922	Aug. 1, 1922	Aug. 30, 1921
	Cents	Cents	Cents	Cents
Lake copper, New York...	14.12½	14.12½	14.12½	12.00
Electrolytic copper, refinery	13.75	13.75	13.75	11.62½
Zinc, St. Louis...	<b>6.25</b>	6.22½	6.25	4.12½
Zinc, New York...	<b>6.60</b>	6.57½	6.60	4.62½
Lead, St. Louis...	5.55	5.60	5.47½	4.20
Lead, New York...	5.90	5.90	5.80	4.40
Tin (Straits), New York...	32.30	32.50	32.75	26.75
Antimony (Asiatic), N. Y.	5.25	5.25	5.25	4.50

Composite Price, Aug. 29, 1922, Finished Steel, 2.412c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	{	Aug. 22, 1922, 2.412c.
	{	Aug. 1, 1922, 2.169c.
	{	Aug. 30, 1921, 2.293c.
	{	10-year pre-war average, 1.689c.

Composite Price, Aug. 29, 1922, Pig Iron, \$29.52 Per Gross Ton

Based on average basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	{	Aug. 22, 1922, \$26.86
	{	Aug. 1, 1922, 24.38
	{	Aug. 30, 1921, 19.64
	{	10-year pre-war average, 15.72

still is greater than that of manufacturers to enter orders, and the supply situation still being very acute and increased labor costs immediately ahead, the trend of prices is strongly upward. Few additional advances have been made by independent producers in the past week, but the Steel Corporation, pursuing the same sort of a policy as it did in the decline of 1921 of following rather than making price changes, has in the past week generally followed the advance recently set up by independent manufacturers. The Corporation really has no official quotations on any of its products except pipe and sheets, but on wire products is naming the independent levels on such business as it can take, and on the same basis is naming 1.90c. base, Pittsburgh, on bars and 2c. on plates and shapes.

Announcement by the Ford Motor Co. of its intention to shut down its plants on Sept. 16 and asking that shipments of steel on order be suspended, is viewed in various ways here. Some regard the movement as merely one of publicity, because it is believed that the company was nearing the end of its active producing season. The Carnegie Steel Co., in setting up its recent priority system of mill schedules, virtually had cut

off the automotive industry. Suspensions will probably be granted by makers of some lines of automotive steel, but among independent sheet makers the disposition is to refuse suspensions, unless the Ford Motor Co. is willing to pay the prices in effect when shipments are resumed. It is not believed here that the Ford movement will have a very widespread effect.

**Pig Iron.**—Business has dwindled almost to the vanishing point since a week ago, not so much because of a lack of demand, but because there is so little iron with which to do business. Few producers have any iron to sell and middle interests seem to have sold such stocks as they had. Those who must have supplies find that it is necessary to meet sellers' price views in order to obtain them. The Valley furnaces have no foundry iron to sell and it is impossible now to get supplies in Buffalo or in Cleveland and while iron can be had in southern Ohio and in the South, it is almost impossible to bring it into this district on account of the railroad congestion. Only an appraisal of the price at which special analysis iron from Valley furnaces would sell is possible at this time. Based on prices made elsewhere, the Valley basis on foundry or

malleable iron is about \$33. Small sales of standard Bessemer have been made at \$32, Valley furnace, and that probably is as low as any more could be bought. Basic iron is no longer available at less than \$30, Valley furnace, and \$32 is the price now demanded by a scrap firm having some Valley iron taken in payment for old material. The Colonial Steel Co., Pittsburgh, is inquiring for 2000 tons of basic iron, but in general the demand for the steel making grades is not very active. Foreign iron of both foundry and steel making grades has been offered here, but no business is reported. The general asking price of foreign iron is \$24.50 c.i.f. Atlantic seaboard, which is equivalent to about \$27 f.o.b. cars. The Shenango Furnace Co. to-day started up its No. 1 furnace and it is reported that the Struthers Furnace Co. is accumulating coke and will start its furnace in a few weeks.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$30.00 to \$32.00
Bessemer .....	32.00
Gray forge .....	33.00
No. 2 foundry .....	33.00
No. 3 foundry .....	33.00
Malleable .....	33.00

**Iron and Steel Bars.**—Although the Steel Corporation is naming 1.90c., base Pittsburgh, on such tonnages of soft steel bars as it can take from regular customers, in keeping with its priority schedule, buyers who must have specified delivery are finding independents uninterested at less than 2c. As high as 2.25c. is demanded by some.

We quote steel bars rolled from billets at 1.90c. to 2.25c.; reinforcing bars, rolled from billets, 1.90c. to 2.25c. base; rail steel reinforcing bars, 1.90c. to 2c.; refined iron bars, 2.35c. in carloads, f.o.b. mill, Pittsburgh.

**Ferroalloys.**—The situation presents no material change. Demand generally is slow and prices recently prevailing still hold. It is reported, however, that on account of liberal shipments of coal from British mines to this country, the fuel situation has grown firmer across the water and that British makers of ferromanganese are less anxious for business than they were a short time ago. Domestic spiegeleisen is slightly easier with regard to supplies, due to the fact that coke is available in somewhat larger quantities than it was recently. The quotations of the leading commercial producer of \$39 furnace for 20 per cent material and \$38 for 16 to 19 per cent are being named on small tonnages, and are being shaded about \$1 per ton on round lots.

We quote 78 to 82 per cent ferromanganese, \$75 c.i.f. Atlantic seaboard for domestic; British, spot, \$72.50; British, future, \$67.50; German, 76 to 80 per cent, \$67.50 to \$70. Average 20 per cent spiegeleisen, \$39 furnace; 16 to 19 per cent, \$38 furnace; 50 per cent ferrosilicon, domestic, \$55 to \$60 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, \$45; 11 per cent, \$48.30; 12 per cent, \$51.60; 13 per cent, \$55.60; 14 per cent, \$58.60; silvery iron, 6 per cent, \$33.50; 7 per cent, \$34.50; 8 per cent, \$36; 9 per cent, \$38; 10 per cent, \$40; 11 per cent, \$42.50; 12 per cent, \$45. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

**Billets, Sheet Bars and Slabs.**—Open market offerings still are exceedingly limited due to the fact that insufficient supplies of fuel and labor shortages render impossible any appreciable increase in steel works operations. Not much business is passing, but this is due more to the lack of supplies than an absence of inquiries. The only sale of consequence that has come to light lately is one of 2000 tons of sheet bars which went at \$38, Pittsburgh. This is probably as low as makers would go on billets or slabs if they had any tonnage for sale, and with pig iron at \$30 or more, many feel that the price should be at least \$40. Any quotations these days are little more than appraisals because actual business is so limited.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$38 to \$40; 2 x 2-in. billets, \$38 to \$40; Bessemer and open-hearth sheet bars, \$38 to \$40; slabs, \$38 to \$40; forging billets, ordinary carbons, \$43 to \$45, all f.o.b. Youngstown or Pittsburgh mills.

**Cold-Finished Steel Bars and Shafting.**—A good many makers in this district are supplied with hot-rolled bars by the Carnegie Steel Co. and lately have been largely shut off as a result of a priority scheduling of mills recently set up by that company. Since bar supplies are available from other sources only at high prices, some makers of cold finished bars now regard 2.50c. base, Pittsburgh to be as low as they should

sell. There is basis, however, for a price of 2.25c. base, Pittsburgh. The Ford Motor Co. has entered suspensions against all orders with makers here, but this action has not yet been followed by other automobile manufacturers. Ground shafting is unchanged at 2.65c. base, f.o.b. mill for carload.

**Wire Rods.**—The American Steel & Wire Co. is understood to have named \$43, Pittsburgh, for the base size of common soft rods on such business as it could take, but as it is not taking any business at the moment the quotation has no significance. The most recent business was at \$45 and that is probably as low as any can be had.

We quote No. 5 common basic or Bessemer rods to domestic consumers, \$45; chain rods, \$45; screw stock rods, \$50; rivet and bolt rods and other rods of that character, \$45; high carbon rods, \$52 to \$55, depending on carbon, per gross ton, f.o.b. Pittsburgh or Youngstown.

**Iron and Steel Pipe.**—Effective Aug. 23, the National Tube Co. issued new cards meeting the advance made Aug. 15, by the Youngstown Sheet & Tube Co. and subsequently followed by other independent. The leading interest also issued new oil country and line pipe cards, making a horizontal cut of three points in the discount, or an advance in price of \$6 per ton. The shortage of the smaller sizes of steel pipe is unrelieved and probably will continue until cold weather halts building work or until labor, rail and fuel conditions are exacting less of a toll on steel productions. Makers are not nearly as heavily obligated on the lap welded sizes as on the butt weld, but are not eager for more business until operating conditions are more settled. The Pure Oil Co. is in the market for 30 miles of 8-in. 29-lb. oil line pipe with couplings, for September delivery. An old inquiry for 200 miles of 20-in. line pipe for the Southwest has been revived. Recent advance in wrought iron pipe seems to have halted buying. Discounts are given on page 569.

**Bolts and Nuts.**—There is a stronger tendency to prices and actual advances are likely to be announced soon, due to the strength of bar prices, which it is now figured can not be lower in the near future with pig iron at \$30 or more and billets appraised at close to \$40. Some makers believe that small machine bolts, with rolled threads, should be at 50, 10 and 5, as against the present official quotation of 60, 10 and 10, and other products up accordingly. One local producer in the past week reduced the discount on cold-pressed nuts 50c. per 100-lb. and also on semi-finished nuts, now quoting the latter at 80 per cent off list on small and 75 per cent off list on large. Discounts are given on page 569.

**Wire Products.**—The American Steel & Wire Co. recently abandoned the prices it has so consistently observed since the early part of the year and has gone to the levels announced two weeks ago by leading independent manufacturers, but only on such business as it is able to take. This company is as heavily committed as it cares to be and is virtually out of the market. Most of the independent manufacturers still are out of the market, but state that if they could take business, they would name \$2.60 base per keg, Pittsburgh, for nails and \$2.35 base per 100-lb. for wire. The Cambria Steel Co., which is out of production at present, has some nails in stock on which it is quoting \$3.25 base per keg, Pittsburgh. The few manufacturers who can take business are not committing themselves very far ahead because it is claimed that the recent advance did not provide for the wage increase which becomes effective Friday and which will add, it is estimated, about \$5 per ton to producing costs. Prices are given on page 569.

**Steel Rails.**—On light rails rolled from new steel the market no longer is quotable at less than 2c. base, this now being the minimum price of the Carnegie Steel Co. One independent producer offering steel rails out of stock has gone to 2.25c. base. Light sections rolled from old standard rails now range from 1.90c. to 2c.

We quote 25 to 45-lb. sections, rolled from new steel, 2c. base; rolled from old rails, 1.90c. to 2c. base; standard rails, \$40 per gross ton mill for Bessemer and open-hearth sections.

**Boiler Tubes.**—The National Tube Co., effective Aug. 23, reduced the discounts on steel lap welded and com-



mercial seamless boiler tubes three points, this being equivalent to an increase of \$6 per ton. In its new seamless tube card, the company segregates cold-drawn and hot-rolled tubes. The carload discount on 3 1/4-in. to 4-in. hot-rolled tubes now is 51 per cent off list, or only three points less, or \$6 per ton higher than the base sizes of lap-welded steel tubes. The National Tube Co. cards have been generally adopted by independent makers. A new card, dated Aug. 25, has been issued by makers of charcoal iron boiler tubes in which the discounts on all sizes have been cut seven points, thus increasing the price \$14 per ton. New discounts are given on page 569.

**Steel Skelp.**—Tubular goods producers who have to buy their skelp are having much difficulty in securing supplies because of the shortage in the general supply of steel. Corporation customers whose product does not come within the priority classifications recently set up have been shut off. Prices range from 2c. to 2.25c., but premiums undoubtedly would have to be paid for early deliveries, particularly of grooved skelp.

**Track Equipment.**—A further advance of \$5 per ton has been made in spikes since a week ago, this change finding its chief explanation in the shortage of steel. Some makers also have advanced track bolts \$5 per ton, but the old price of \$3.50 base per 100-lb. still is possible on attractive business. Prices are given on page 569.

**Tin Plate.**—Independent makers, on account of increasing labor costs, are beginning to talk higher prices, and it is possible will soon announce an advance of \$5 per ton. It is claimed that preferential prices to large buyers are disappearing and that \$4.75 per base box, Pittsburgh, now is minimum on new business to either large or small buyers. Container manufacturers seem to be amply covered, and new business is not especially heavy.

**Hot-Rolled Flats.**—The Steel Corporation has made no public announcement, but is believed to be naming 2.75c. base, Pittsburgh, the price recently set up by independents for fourth quarter business, on such orders as it can take. Some of the makers of strips in this district will suffer as a result of the suspension by the Ford Motor Co.

**Cold-Rolled Strips.**—The price of 4.25c. base, Pittsburgh, recently named on fourth quarter business by independents, is being generally observed.

**Cut Nails.**—The Reading Iron Co. has announced an increase of \$3 per ton to a base of 2.90c., mill, for carloads and 3c. for less than carloads.

**Rivets.**—One large maker has announced an advance in large rivets of \$7 per ton, and a 5 per cent reduction in the discount on small rivets. Some makers still are taking business at the former price level of \$2.65, base, per 100 lb., for button-head structural, and \$2.75 for cone-head boiler rivets, but all makers are on a base of 70 per cent off list for small rivets. The strength of the market is explained largely by the scarcity and increasing costs of bars and rods. Prices and discounts are given on page 569.

**Structural Material.**—Shortage of steel and inability of fabricators to obtain shipments even on old orders is seriously restricting business. Prices on structural jobs have not fully reflected the advances which have taken place to date on plain material, but investors are deterred from closing because of the very indefinite delivery promises that can be made. The Steel Corporation cannot take on much business, but on such tonnages as it is accepting its price is 2c., Pittsburgh. This price now would not interest independent mills. Prices are given on page 569.

**Warehouse Business.**—The Jones & Laughlin Steel Co. and Carnegie Steel Co. have made further advances in warehouse prices. Bars, plates and shapes have been advanced \$3 per ton and bands \$6 per ton. New prices are 2.60c. base for bars, 2.70c. for plates and shapes, 3.40c. for bands.

**Sheets.**—While the Ford Motor Co. has asked for suspensions on shipments of sheets because it proposes to shut down on Sept. 16, other automobile manufac-

turers, anxious to keep going, still are pressing urgently for delivery. Outside of automobile sheets, the supply situation does not appear to be as taut as it was recently, presumably because the independent mills have managed to keep going until this week at a fairly high rate of operations, and undoubtedly have provided for a good many wants. Operations of independent mills in the first half of this month were in excess of 87 per cent of capacity. No such showing is likely during the second half of the month, because of the decline in the production of steel. In the matter of steel supplies, the leading interest is worse off than the independents, and since it is making no material reduction in its obligations is obliged to turn down much business for delivery over the remainder of this year. Independents are asking advances over the Steel Corporation prices of \$3 to \$8 per ton, but some independent producers say they have lost business in black sheets at 3.50c. Prices are given on page 569.

**Coke and Coal.**—There has been a further easing in prices since a week ago, due to increased production. The gain is greater in the union than in the non-union coal fields, because so far the increased wages recently announced in the non-union fields have not resulted in the return to work of many men. The coal market now is quotable at \$5 to \$5.25 at mines for steam coal, \$5.25 to \$5.50 for by-product coal, and from \$5.50 to \$6 for gas coal. Generally the supply of furnace coke is insufficient to attract much furnace buying, but we note sales for Eastern shipment at \$10.50 and to the Valley district as low as \$10. Furnace coke appears to be quotable from \$10 to \$11 per net ton at oven. Demand for foundry grade is more constant than that for furnace fuel and the premium of the former over the latter is greater than usual, sales being noted from \$12 to \$14.

**Old Material.**—The market maintains all of its recent strength and still is inclined higher, because of light offerings and an increased disinclination on the part of dealers to let go of yard stocks. A Pittsburgh district steel maker still is offering \$18.50 for railroad or equivalent heavy melting steel, but has found no takers because dealers feel they would have to pay at least \$19 for such material and to sell yard stocks at this price would entail a loss, it is claimed. Since no sales have been made above \$18.50 nor below, the market is quotable at that price. On yard heavy melting steel \$17.50 seems to measure the top and bottom of the market. All other open-hearth grades are more firmly held than they were recently. This also is true of blast furnace material.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel, railroad and industrial .....	\$18.50
Heavy melting steel, yard .....	17.50
No. 1 cast, cupola size .....	\$19.00 to 19.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va.; Franklin, and Williamsport, Pa. ....	18.50 to 19.00
Compressed sheet steel .....	16.50
Bundled sheet sides and ends .....	15.50
Railroad knuckles and couplers .....	19.00 to 19.50
Railroad coil and leaf springs .....	19.00 to 19.50
Low phosphorus standard bloom and billet ends .....	22.00 to 22.50
Low phosphorus, plates and other grades .....	20.00 to 20.50
Railroad malleable .....	17.00 to 17.50
Iron car axles .....	27.00 to 28.00
Locomotive axles, steel .....	25.00 to 26.00
Steel car axles .....	20.00 to 20.50
Cast iron wheels .....	20.00 to 20.50
Rolled steel wheels .....	19.00 to 19.50
Machine shop turnings .....	14.25 to 14.75
Heavy steel axle turnings .....	16.00 to 16.50
Short shoveling turnings .....	16.00 to 16.50
Cast iron borings .....	16.00 to 16.50
Heavy breakable cast .....	18.50 to 19.00
Stove plate .....	14.50 to 15.00
Sheet bar crop ends .....	20.50 to 21.00
No. 1 railroad wrought .....	15.50 to 16.00

The Illinois Car Mfg. Co., Hammond, Ind., has purchased the American Nut Co., Columbus, Ohio, and will move the business to Hammond.

## Chicago

### Heavy Advances in Prices of Finished Products —Many Inquiries

CHICAGO, Aug. 29.—The 20 per cent increase in the wages of the steel works labor has been followed by advances in finished steel prices. The minimum quotation on mild steel bars for indefinite delivery has gone up \$1 a ton to 1.95c., Chicago, while plates and shapes have advanced \$3 a ton to a minimum of 2.05c., Chicago. Tie plates, spikes and bolts, axles and hoops and bands have also been raised, and among the semi-finished products, axle and forging billets are higher and early advances are expected on re-rolling billets and sheet bars. Prices for early shipment are not clearly defined, as buyers are dependent largely on Eastern sources quoting f. o. b. Pittsburgh. The Inland Steel Co., however, is expected to re-enter the market soon when it will announce prices on plates, shapes, bars, sheets and other products for delivery in the last two or three months of the year. Bar iron has advanced to 2.25c., Chicago, and wire products have gone up to the independent level of prices. Discounts on bolts and nuts are expected to be revised upward in view of advances in raw material.

Forward buying of steel shows no decline. In fact, for one large mill, August bookings were slightly heavier than these of the previous month. Inquiries for 1923 delivery are now being received. Quotations have been asked on a substantial tonnage of sheets for first quarter shipment and an inquiry for 3200 tons of nut stock for January and February shipment has been put out by a new local nut and bolt plant. Mills are disinclined to quote that far ahead, although the recent setback in production may result in delaying the delivery of some business now on the books until the first of the year.

The local production situation remains unchanged.

**Pig Iron.**—No additional merchant furnaces have been banked in this district and while fuel supplies are still low, it is hoped that the next change in the operating situation will be in the direction of greater production. The performance of the merchant stacks in this territory has been remarkable in view of conditions that obtain in other sections of the country. Of the 10 furnaces represented by the leading seller, five are still active, namely, two Iroquois, one Federal, one Mayville, and the Zenith stack. Reports from the East indicate that only one merchant furnace, a Toledo stack, is in blast in Ohio and none is active in Western Pennsylvania. The dearth of iron in that territory is indicated by numerous inquiries received by Chicago producers from various points in Ohio and even in West Virginia. Local prices remain unchanged, although a few spot tonnages have brought premiums, a lot of 150 tons having been sold at as high as \$32 base furnace. Melters not only appear to be in need of iron but seem satisfied that present prices are here to stay, if indeed further advances are not made. Demand for prompt iron is unabated and purchases for the remainder of the year are being made freely. The movement of iron from the South is blocked by railroad embargoes. A local broker, however, has made a sale of 1200 tons of Southern foundry for delivery to an Ohio plant of a Chicago concern. A limited amount of consignment iron is finding its way to Chicago, though some of this has been in transit for weeks. Southern prices have generally advanced, the market now being quotable at \$24 to \$25 base Birmingham. While Southern producers are largely cut off from the Chicago territory at present, this is not true of furnaces in the St. Louis district. A number of large sales of foundry for delivery in this section have been closed at \$30 base furnace, f. o. b. St. Louis, a Wisconsin melter having bought 2000 tons, a company with plants in Chicago and Michigan having purchased 1500 tons and a northern Illinois user having ordered 250 tons, all for prompt shipment. Charcoal is now generally quoted at \$33 base furnace, and a sale of 400 tons has been made at that price. Copper free low phosphorous is firmly established at \$38, Valley Furnace, a sale of 1000 tons having been closed at that quotation. Most

low phosphorous furnaces are idle and stocks on furnace banks are low. Silvery has advanced to a minimum of \$37.50 f. o. b. Jackson, for 8 per cent. While most melters are confining their attention to their immediate and fourth quarter needs, an inquiry for 500 tons of foundry for first quarter shipment has been received by local sellers. Interest in freight rates from the South has again been aroused by the announcement of a combination rate of \$4.18 on shipments via barge from Sheffield and Florence, Ala., to Metropolis, Ill., and by rail over the Chicago, Burlington & Quincy to Chicago. The new rate will become effective Sept. 15 unless suspended by the Interstate Commerce Commission. This rate has been subject to numerous changes. Until July 1 it was \$4.66. It was then reduced to \$4.33 and on July 20 was advanced to \$4.98.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging	
sil. 1.50, delivered at Chicago.....	\$36.15
Northern coke, No. 1, sil. 2.25 to 2.75	31.00
Northern coke, foundry, No. 2, sil.	
1.75 to 2.25.....	30.00
Northern high phos.....	30.00
Southern No. 2.....	\$30.00 to 31.00
Malleable, not over 2.25 sil.....	30.00
Basic.....	30.00
Low phos, Valley furnace, sil. 1 to 2	
per cent copper free.....	33.00
Silvery, sil. 8 per cent.....	42.29

**Ferroalloys.**—A local company has closed for 200 tons of ferromanganese for delivery to plants at various locations. The purchase was made at \$67.50, seaboard, and shipment is to be made from foreign sources. Otherwise the ferroalloys are quiet and the price situation is unchanged.

We quote 78 to 82 per cent ferromanganese future, \$75.06; prompt, \$77.56 to \$82.56, delivered; 50 per cent ferrosilicon, \$55, delivered on contract and \$57 prompt delivery; spiegeleisen, 18 to 22 per cent, \$47 to \$49, delivered.

**Plates.**—Plates are now quoted at from 2.05c. to 2.25c., Chicago, for indefinite delivery, while material for reasonably early shipment is commanding from \$2 to \$7 a ton above the maximum on forward business. Demand is still active.

The mill quotation is 2.05c. to 2.50c., Chicago. Jobbers quote 2.90c. for plates out of stock.

**Cast Iron Pipe.**—Minneapolis has awarded 1100 tons to the American Cast Iron Pipe Co. There are no other lettings to report and business generally is quiet. Prices continue to show strength and some makers are now quoting a minimum of \$40, base, Birmingham, for 6-in. and larger. Freight congestion in the South is bad as ever and shipments from plants in that section are blocked.

We quote per net ton, f.o.b. Chicago as follows: Water pipe, 4-in., \$50.70 to \$52.20; 6-in. and above, \$46.70 to \$48.20; class A and gas pipe, \$3 extra.

**Warehouse Prices.**—Advances in mill prices have been reflected in higher warehouse quotations. Bars, shapes, plates and bands have been advanced \$2 a ton, structural and boiler rivets \$3 a ton and hoops \$4 a ton. Cold-drawn steel bars have also gone up \$2. Revised prices are to be found under appropriate paragraphs. A \$5 advance on cold-rolled strip steel brings that commodity up to 6.40c. base. Jobbers' prices on standard spikes and track bolts have been advanced \$2 a ton to 3.50c. and 4.50c. respectively. Light rails have also been advanced on 25 to 45-lb. sections to 2.70c., 16 to 20-lb. sections to 2.745c., 12-lb. to 2.79c., and 8-lb. to 2.835c. Prices on 50-lb. and heavier sections remain unchanged. Billet prices have also gone up, 0.15 to 0.25 per cent carbon now being quoted at 2.75c. and 0.35 to 0.45 per cent carbon at 2.795.

**Wire Products.**—Minimum prices on wire, wire nails and cement coated nails are now \$2.35, \$2.60 and \$2.10, Pittsburgh, respectively. With mill operations still far below capacity, demand is considerably in excess of current production. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 569.

We quote warehouse prices, f.o.b. Chicago: No. 9 and heavier black annealed wire and No. 9 and heavier bright basic wire, \$3.20 per 100 lb.; common wire nails, \$3.35 per 100 lb.; cement coated nails, \$2.75 per keg.

**Bolts and Nuts.**—The Nash Motor Works is in the market for a large quantity of nuts. The report that the Ford Motor Co. will shut down Sept. 16 has caused some concern among sellers although it is felt that the



necessity for closing may be averted. Demand from all sources is satisfactory and an early advance in prices is looked for in view of higher material costs. The prices on page 569 apply to this territory except that the basing point is Chicago instead of Pittsburgh.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.60c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 50, 10 and 10 per cent off; larger sizes, 50 and 10 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 50 and 10 off; larger sizes, 45 off; hot pressed nuts, squares and hexagons, tapped, \$3.25 off; blank nuts, \$3.50 off; coach or lat screws, gimlet points, square heads, 60 per cent off; quantity extras are unchanged.

**Bars.**—Soft steel bars for indefinite delivery are now quoted from a minimum of 1.95c. to 2.15c., Chicago. Demand is still insistent notwithstanding the fact that owing to recent curtailment in production shipments may not be made until first quarter. The scarcity of bars for early shipment continues, with prices ranging from 2.35c., Chicago, up. Bar iron is now firm at 2.25c., Chicago, with demand somewhat lighter. One important producer has obtained additional fuel and has reentered the market. With the settlement of the strike at the Chicago Heights hard steel mills, those plants are again producing. Prices are unchanged on hard bars, the Moline mill quoting 1.85c., f.o.b. plant, or slightly over 2c., Chicago, while local mills are quoting a flat price of 2c., Chicago.

Mill prices are: Mild steel bars, 1.95c. to 2.45c., Chicago; common bar iron, 2.25c., Chicago; rail steel, 2c. to 2.005c., Chicago.

Jobbers quote 2.80c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 2.80c. for rounds and 4.30c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.50c. base; hoops, 3.90c.; bands, 3.55c.

**Rails and Track Supplies.**—Three important trunk lines entered the market last week with inquiries calling for a total of 60,000 tons of rails for 1923 delivery. Three or four other lines are about to issue inquiries and in view of the fact that rail orders for this year were relatively light, heavy purchases of both rails and fastenings are looked for this fall. Tie plates and spikes and bolts have advanced, tie plates being quoted at \$43 to \$45, mill, spikes at 2.75c. to 3c., mill, and bolts at 3.75c. to 4c., mill. Light rails are also up, now being quoted at 2c. to 2.25c., mill.

Standard Bessemer and open-hearth rails, \$40; light rails rolled from new steel, 2c. to 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 2.75c. to 3c., mill; track bolts with square nuts, 3.75c. to 4c., mill; tie plates, steel and iron, 2.15c. to 2.25c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.50c. base and track bolts 4.50c. base.

**Semi-Finished Steel.**—Axle billets are now quoted at a minimum of \$40 and forging billets at \$45, f.o.b. Chicago district mill. Sheet bars and reolling billets are still quoted at \$35 to \$40, mill, but early advances are looked for.

Pending work includes:

Three-story garage for Paul Cornell estate, Chicago, 150 tons.

Ben Franklin office building, Indianapolis, 185 tons.

Public Service Co. of Northern Illinois, power plant, Waukegan, Ill., 110 tons.

**Sheets.**—Independent mills are getting \$2 more on blue annealed and \$3 more on black and galvanized than the prices recently announced for fourth quarter delivery by the American Sheet & Tin Plate Co. The Inland Steel Co. is still out of the market, but is expected to announce fourth quarter prices soon.

Mill quotations are 3.35c. to 3.50c. for No. 28 black, 2.50c. to 2.60c. for No. 10 blue annealed and 4.35c. to 4.50c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote blue annealed, 4c.; black, 4.85c.; galvanized, 5.85c.

**Hoops and Bands and Axles.**—These products have been advanced, hoops and bands now being quoted 2.75c. to 3c., f.o.b. mill, and axles at 2.50c. to 2.75c., mill.

**Steel Castings.**—Rising labor and material costs make advance in steel castings appear inevitable. Those foundries which have not anticipated the wage advances made by the Steel Corporation now find that they must raise their men to a parity with those employed by the mills. Meanwhile prices of pig iron and scrap are going up rapidly, with the result that the question of costs is receiving careful consideration.

**Structural Material.**—The market on plain material for indefinite delivery now ranges from a minimum of

2.05c. to 2.25c., Chicago. Reasonably early shipment is hard to get, but prices of from 2.35c. to 2.55c., delivered Chicago, are not unusual with the trend strongly upward. Fabricating awards for the week are liberal, but competition on new work is declining because shops are filled up and deliveries of material from the mills are slow.

The mill quotation on plain material is 2.05c. to 2.45c., Chicago. Jobbers quote 2.90c. for plain material out of warehouse.

**Reinforcing Bars.**—In view of limited mill shipments, reinforcing bar sellers are following a careful policy, lest they find themselves unable to discharge present obligations from their warehouse stocks. Their customers are exerting increasing pressure upon them for steel, emphasizing the present scarcity, at the same time indicating a general expectation of further price advances. The slowness of mill shipments has further complicated the situation by increasing the relative demand for material out of warehouse.

Union Electric Light & Power Co., power station, East St. Louis, Ill., 1500 tons, to Paul J. Kalman Co.

Igoe Printing Co. building, Chicago, 650 tons, to Paul J. Kalman Co.

Exchange National Bank, Tulsa, Okla., 350 tons, to Concrete Steel Co.

Hotel building for Main Street Corporation, Evanston, Ill., 176 tons, to Concrete Steel Co.

Masonic Temple building, Guthrie, Okla., 160 tons, to Concrete Steel Co.

**Coke.**—Local by-product foundry prices remain unchanged. While the Chicago producer has not yet been able to increase its production above 25 per cent, it is making every effort to keep foundries in this section supplied with sufficient coke to avert a suspension of operations. Some coke is also coming in from outside sources, although deliveries, particularly from the East, are uncertain. Considerable Southern by-product foundry coke is moving into this territory, and the fact that shipments are managing to get through is explained by the fact that Southern railroad embargoes apply to pig iron and not to fuel. This coke is selling at the same price as the local product on contract and at higher prices for spot delivery. Connellsville coke has weakened, foundry now being quoted at \$14.50, ovens.

**Old Material.**—The market has mixed characteristics, with caution actuating the attitude of some consumers while others are willing to pay high prices to get spot shipment. At the same time, dealers are paying advancing quotations for such material as is offered. Little scrap is coming from the railroads, the largest producers, with the result that sellers are finding themselves short of some materials or have had to draw heavily on yard stocks. That scrap prices are moving up sympathetically with advances in finished iron and steel products and pig iron is also evident.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	\$20.50 to \$21.00
Cast iron car wheels	22.50 to 23.00
Relaying rails	22.50 to 27.50
Rolled or forged steel car wheels	21.50 to 22.00
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	20.50 to 21.00
Heavy melting steel	17.00 to 17.50
Frogs, switches and guards cut apart	17.00 to 17.50
Shovelling steel	16.50 to 17.00
Drop forge flashings	12.50 to 13.00
Hydraulic compressed sheet	14.00 to 14.50
Axle turnings	15.00 to 15.50

Per Net Ton

Iron angles and splice bars	19.50 to 20.00
Steel angle bars	17.00 to 17.50
Iron arch bars and transoms	20.50 to 21.00
Iron car axles	24.00 to 24.50
Steel car axles	18.50 to 19.00
No. 1 busheling	14.00 to 14.50
No. 2 busheling	9.00 to 9.50
Cut forge	15.00 to 15.50
Pipes and flues	11.50 to 12.00
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	15.00 to 15.50
Steel knuckles and couplers	18.50 to 19.00
Coil springs	19.50 to 20.00
No. 1 machinery cast	20.00 to 20.50
No. 1 railroad cast	18.50 to 19.00
Low phos. punchings	16.00 to 16.50
Locomotive tires, smooth	15.50 to 16.00
Machine shop turnings	10.00 to 10.50
Cast borings	12.00 to 12.50
Stove plate	16.50 to 17.00
Grate bars	16.50 to 17.00
Brake shoes	16.50 to 17.00
Railroad malleable	18.00 to 18.50
Agricultural malleable	18.00 to 18.50

## Philadelphia

### Active Demand for Plates and Bars—Foreign Pig Iron Coming Freely

PHILADELPHIA, Aug. 29.—With the 20 per cent advance in wages going into effect in the iron and steel industry on Friday of the present week, producers will face a further increase in costs which already have been so great that profits either are extremely narrow or have entirely disappeared. But the trade here feels that the wage advance was justified. Estimates have been made by makers that production costs in finished lines increased \$5 per ton in August over July. Because September will see further increases, advances in prices in some lines have been made and others are considered to be inevitable. Operations continue at practically the same rate in the Philadelphia district as they were last week, but caution is shown in making commitments, owing to the fuel supply situation. Since the return of miners to work under the Cleveland agreement, the coal supply has improved somewhat, but the iron and steel industry, being in the lowest priority classification, has not so far received any particular benefit.

Demand for pig iron, plates, and bars is active, but sales are limited. Practically no iron is being offered in this district. The chief demand is for foundry grades. Prices of No. 2 plain and No. 2X have advanced \$1 per ton and now take a range of \$33.14 to \$33.64 for the former and \$34.14 to \$34.64 for the latter, delivered at Philadelphia. Foreign iron is coming in freely, particularly foundry grades. Ferromanganese and manganese imports are also reported to be brisk, especially the former, owing to the impending high tariff duties. Sheets are being quoted at \$6 and billets at \$2.50 per ton higher by some makers in this district.

The announcement by Henry Ford that he will close his plants on Sept. 16 is widely commented on. Its probable effect is variously interpreted. It is pointed out that this suspension will cut off demand in some lines, as forgings, sheets and accessories, and at the same time reduce the output of scrap, in which there now is a shortage; but it is doubted that Ford's action, unless followed by other large consumers, will halt prices. Some in the trade maintain that another period of inflation already has set in and are apprehensive of the consequence.

**Ferroalloys.**—No prompt tonnages of ferromanganese are available in this district, except for small lots occasionally obtainable from middlemen. This delivery commands \$72.50, seaboard. Third and fourth quarter tonnage is quoted at \$67.50 on foreign shipments for 78 to 80 per cent alloys. The trade reports that car wheel makers are showing a tendency to turn to standard spiegeleisen, 19 to 21 per cent, in view of difficulty in getting ferromanganese. Spiegel is quoted and has sold at \$38.50. Fair sized shipments of foreign manganese ore are en route to this country. This ore is quoted at 28.50c. to 29c. per unit, a light lot being sold the past week at the lower price.

**Pig Iron.**—Iron is coming in freely from abroad, especially from the Cleveland district, England. Other shipments are coming from Scotland and France. The greatest demand is for foundry grades, which constitute most of the imported tonnage. Only two furnaces in this district are quoting on foundry. They are able to take but small lots and have advanced prices \$1 per ton, No. 2 plain now being quoted at \$33.14 to \$33.64 and No. 2X at \$34.14 to \$34.64. Some consumers have vainly scoured the market for small lots of foundry, finding makers out of the market and brokers unable to provide requirements. Small lots of foreign low phosphorus steel making iron have been sold in the past week. One lot of 0.08 phosphorus is reported to have been sold by a British maker of hematite iron. A consumer in Cumberland, Md., is inquiring for 5000 tons of basic iron for immediate shipment, but was unable to find the tonnage in this district. Indicating the scarcity of iron, it is reported that an Eastern seaboard steel works has sold a fair sized lot of off

basic to a Pittsburgh district consumer. French, Scotch, and English sales of foundry iron, 2.50 to 3 per cent silicon, have been sold in this district at \$31, c.i.f. for the Scotch and \$29 for the English and French grades. Three boatloads of this kind of iron will be delivered within two weeks, most of it being Scotch iron. One maker of basic has increased the price 50c. per ton and now is asking \$28, furnace.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 76 cents to \$1.64 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$33.14 to \$33.64
East. Pa. No. 2X, 2.25 to 2.75.....	34.14 to 34.64
East. Pa. No. 1X.....	35.64
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 30.17
Virginia No. 2X, 2.25 to 2.75 sil....	30.17 to 31.17
Basic delivery eastern Pa.....	28.64 to 31.14
Gray forge .....	29.50 to 31.50
Malleable .....	30.00 to 32.00
Standard low phos. (f.o.b. furnace)	35.00
Copper bearing low phos. (f.o.b. furnace)	35.00 to 40.00

**Semi-Finished Steel.**—Makers of open-hearth forging and rerolling billets are asking an increase of \$2.50 per ton for September-October delivery, but are not quoting beyond that period. This brings the price of the former to \$45, base, Pittsburgh, and the latter to \$40, base, Pittsburgh, the freight rate to Philadelphia being \$5.17. No sales have been reported during the past week.

**Plates.**—While most makers of plates continue to quote 2.25c. base, Pittsburgh, one prominent producer has advanced to 2.50c. Demand is heavy, particularly from locomotive works and railroads. Car repairs are bringing large inquiry. Most makers are taking orders from regular customers only and are not quoting beyond the third quarter. Considerable business is being declined owing to restricted operations and uncertainty of the market. A producer with 24 open-hearth furnaces is able to operate only 10 and is using oil for fuel. Deliveries on universal plates are being promised in four to six weeks and on sheared plates in eight to twelve weeks. An inquiry is out for 2000 tons of plates for Eastern shipyards for fourth quarter delivery. The M. K. & T. railroad has placed orders for 50 locomotives, 45 going to the Lima Locomotive Works, Inc. and five to the American Locomotive Co. The Illinois Central has placed an order for 15 locomotives with the Baldwin Locomotive Works.

**Structural Material.**—While the range of 2c. to 2.25c., Pittsburgh, still exists for plain material, the market is firmer and the higher figure is being quoted by most interests, and it is now doubtful whether any sizeable tonnage could be obtained at the lower quotation. Inquiry for structural material is only fair. Reluctance is shown by mills to quote on anything but immediate specifications. Dietrich Bros. have been awarded a contract for 300 tons for the National Bank building, Baltimore. Inquiries include 700 tons for an office building at Richmond for the State of Virginia and 800 tons for a large garage for the Consolidated Gas & Electric Light Co., Baltimore.

**Bars.**—Soft steel bars are being inquired for in fair-sized volume, some of the prospective business coming from jobbers. Prices are firm and the price of 2c., base, Pittsburgh, has practically disappeared, giving place to quotations ranging from 2.15c. to 2.25c. Delivery is being promised in four to six weeks. Iron bar demand also is fair, with the price range from 2c. to 2.25c., Pittsburgh, for car lots, and it is probable less than carloads could be bought at the higher figure.

**Warehouse Business.**—Active demand exists for stock material and is most marked for light bands and spring steel, the prices of which have been increased. Spring steel has been advanced from 3.50c. to 4c. and light bands from 3.45c. to 3.60c. Higher costs are assigned as the cause for the greater levels, at which tonnage is moving.

Soft steel bars and small shapes, 2.80c.; iron bars (except bands), 2.80c.; round edge iron, 3c.; round edge steel, iron finish, 1½ x ½ in., 3c.; round edge steel planished, 3.75c.; tank steel plates, ¼-in. and heavier, 2.90c.; tank steel plates, 3/16-in., 3.10c.; blue annealed steel sheets, No. 19 gage, 3.60c.; black sheets, No. 28 gage, 4.45c.; galvanized sheets, No. 28 gage, 5.60c.; square twisted and deformed steel bars, 2.90c.; structural shapes, 2.90c.; diamond pattern plates, ¼-in., 4.80c.; 3/16-in., 5c.; spring steel, 4c.; round cold-rolled steel, 3.50c.; squares and hexagons, cold-rolled steel, 4c.; steel hoops, No. 13 gage and lighter, 4c.; steel bands, No. 12 gage to 3/16-in., inclusive, 3.60c.; rails, 2.80c.; tool steel, 8c.; Norway iron, 5.50c.



**Sheets.**—Independent makers now are asking 3.50c. for one-pass No. 28 black sheets, 4.70c. for No. 28 galvanized sheets and 2.75c. for No. 10 blue annealed sheets for September-October shipment. Inquiry is only moderate.

**Nuts, Bolts and Rivets.**—Standard railroad spikes have been advanced by a prominent producer in this district to 2.50c. per lb., Pittsburgh, this including sizes  $\frac{1}{4}$ -in. and larger, while an increase from 2.90c. to 3c. has been made on the smaller sizes,  $\frac{1}{8}$ -in.,  $\frac{3}{16}$ -in. and  $\frac{1}{2}$ -in. Railroad demand is heavy. Fair inquiry is being made for bolts and nuts. Rivet demand is extremely quiet. Large machine bolts are quoted at 60 and 10 per cent off list.

**Old Material.**—No change has been made in prices of iron and steel scrap during the past week, but the market has developed a firmer tone. Higher quotations are expected to be made in the near future. Demand is active and considerable business is being declined. Dealers are holding back. One reason assigned for further advances is an expected car shortage. It also is contended that less scrap is being produced by the railroads and that the closing down of the Ford plant will restrict the output. Coupled with this is the shortage of pig iron, calling for heavy charges of old material in open-hearth furnaces. Demand is strongest for cast iron car wheels, No. 1 heavy melting, No. 1 railroad wrought and machine shop turnings somewhat better inquiry for blast furnace borings and turnings has come out. These grades have been in smallest demand owing to the blowing out and banking of furnaces, but are being used more freely owing to the high price of coal and coke.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$15.50 to \$16.00
Scrap rails .....	15.50 to 16.00
Steel rails for rolling.....	17.00 to 17.50
No. 1 low phos., heavy 0.04 and under	22.00 to 24.00
Cast iron car wheels.....	19.00 to 19.50
No. 1 railroad wrought.....	18.50 to 19.00
No. 1 yard wrought.....	17.00 to 17.50
No. 1 forge fire.....	14.00 to 14.50
Bundled sheets (for steel works)....	13.50 to 14.00
No. 1 busheling.....	12.50 to 13.00
No. 2 busheling.....	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use).....	13.00 to 13.50
Mixed borings and turnings (for blast furnace use).....	13.00 to 13.50
Machine-shop turnings (for steel works use).....	13.50 to 14.00
Machine-shop turnings (for rolling mill use).....	14.50 to 15.00
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mills).....	14.50 to 15.00
Cast borings (for chemical plants)...	17.00 to 17.50
No. 1 cast.....	19.00 to 20.00
Heavy breakable cast (for steel plants).....	19.00 to 19.50
Railroad grate bars.....	15.50 to 16.00
Stove plate (for steel plant use)....	15.00 to 16.00
Railroad malleable.....	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications).....	14.00 to 14.50
Shafting .....	21.00 to 22.00

## Buffalo

BUFFALO, Aug. 29.

**Pig Iron.**—The market for pig iron is very firm with furnaces showing no disposition to shade the higher prices which have recently been established in this district. No. 2 plain is being sold at \$33, sales made on this basis ranging well above 2500 tons. A high silicon grade of foundry iron has sold at \$36 with other grades ranging between these two prices. Inquiry shows some improvement, being close to 15,000 tons. One consumer is in the market for 4000 tons of iron. Present operation is not likely to be changed, it is indicated by producers. Scotch iron is being offered here at prices just below those asked for the product of local furnaces.

We quote f.o.b. per gross ton Buffalo as follows, the higher prices being for early shipment:

No. 1 foundry, 2.75 to 3.25 sil.....	\$35.00 to \$36.00
No. 2X foundry, 2.25 to 2.75 sil.....	34.00 to 35.00
No. 2 plain, 2.75 to 2.25 sil.....	33.00 to 34.00
Basic.....	26.00
Malleable.....	32.00 to 33.00
Lake Superior charcoal.....	33.28

**Finished Iron and Steel.**—There has been a slackening in demand for most finished materials. The demand

for bars, shapes and plates has declined, but the ruling price of \$2.25 is being firmly maintained. There is some disposition to look for higher prices after Sept. 1, when wage increases go into effect, as fuel costs have not yet declined to anything like normal levels. Buffalo mills have taken on some good-sized bar orders including one of 1000 tons. It is possible to get business at the 2.25c. price as the Corporation is giving no promise of shipment while quoting 1.90c. A Buffalo fabricator has taken an 800-ton contract, the material to be used in an ore bridge.

**Warehouse Business.**—Warehouses report an excellent demand for materials, due to consumers' inability to get prompt deliveries from any of the mills or selling agencies in this district. Prices which were recently fixed at higher levels than those which had been in effect are being maintained. Warehouses are coming into the market for tonnage to replenish depleted stocks.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 2.90c.; plates, 2.90c.; soft steel bars, 2.80c.; hoops, 3.70c.; bands, 3.55c.; blue annealed sheets, No. 10 gage, 3.90c.; galvanized steel sheets, No. 28 gage, 5.55c.; black sheets, No. 28, 4.55c.; cold rolled round shafting, 3.80c.

**Old Material.**—There is a good demand for heavy melting steel with most of the mills here in the market for material. Prices paid range from \$17 to \$17.25. There is little free tonnage on the market, due to the delay in railroad lists. Outside demand and offers of higher prices have resulted in advanced prices in some materials, notably machinery cast, which is now bringing \$19 to \$20 and car wheels which are selling for \$18.50 to \$19.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel.....	\$16.75 to \$17.00
Low phos., 0.04 and under.....	18.00 to 19.00
No. 1 railroad wrought.....	16.00 to 16.50
Car wheels .....	18.50 to 19.00
Machine shop turnings.....	10.50 to 11.00
Cast iron borings.....	14.00 to 14.50
Heavy axle turnings.....	14.00 to 14.50
Grate bars .....	14.00 to 14.50
No. 1 busheling.....	15.00 to 15.50
Stove plate .....	15.00 to 15.50
Bundled sheet stampings.....	11.50 to 12.00
No. 1 machinery cast.....	18.50 to 19.00
Hydraulic compressed .....	15.00 to 15.50
Railroad malleable .....	18.00 to 19.00

## Cleveland

### Pig Iron Prices Advance \$3—Hold Up Orders for Ford Supplies

CLEVELAND, Aug. 29.—The fuel situation has improved in that with the operation of Ohio mines, steam coal is available, but shipments of Virginia and Kentucky coking coal curtailed by the impairment of transportation facilities show no improvements. The Bourne-Fuller Co. will advance wages at its Upton Steel Plant Sept. 1 to the new Steel Corporation scale. Recently the McKinney Steel Co. and the Otis Steel Co. advanced wages for common labor to 35c. per hour or 1c. less than the new Corporation rate and their present schedule will probably remain in effect. The announcement of the Ford Motor Co. that it will close its plant Sept. 16 because of the lack of fuel and the broadcasting of orders cutting out shipment of parts on contract after Sept. 5 has affected several Ohio steel plants and a number of manufacturers of forgings and other parts. Mills have received hold up orders on steel bars for Ford forgings and alloy steel makers have been ordered to suspend shipments for 30 days on some contracts. Some sheet mills have been instructed to discontinue shipments after orders are filled on August specifications. A number of Cleveland consumers report that their shortage of steel is acute.

No announcement as to whether the 20 per cent wage advance of the Steel Corporation will apply to its iron ore mines has as yet reached local Corporation officers or local ore men. Reports from the mining districts state that no notices have been posted at the mines advising the wage increase. Independent mining companies are naturally deeply interested, as they will probably meet any wage advance made by the Corporation. The blowing out of blast furnaces has resulted in the temporary holding up of ore shipments of some

consumers, but no requests for cancellations are reported.

**Pig Iron.**—With the pig iron shortage daily becoming more acute the Cleveland price on foundry iron advanced \$3 a ton to \$35 during the week and some producers are predicting that the price will reach \$40 or higher. With stocks growing low, foundries are crowding furnaces for deliveries. A local producer, the only lake furnace interest except at Buffalo that has any iron available for early shipment, has sold 1000 to 2000 tons in lots of 400 tons and under at \$35 for delivery in Cleveland and vicinity. With advancing prices, considerable inquiry came out during the week for foundry iron for early shipment and for the fourth quarter. Several inquiries, including two for 1000 to 1500 tons and another for 900 tons were made for foundry iron for the first quarter of next year, but producers declined to quote on these inquiries. A limited amount of foundry iron is being offered in northern Ohio by the southern Ohio furnace of a steel-making plant and a Canadian steel maker has sold some foundry iron in Indiana. Local sales of southern Ohio foundry iron are reported at \$30 to \$32 at furnace and one car lot of resale iron brought \$36 or \$33 at furnace. In Buffalo an 800-ton lot of No. 2X iron for prompt shipment brought \$35. In the Michigan territory, a small lot sale was made by a lake furnace at \$33 for prompt shipment and a 1500-ton lot of malleable iron was placed for the fourth quarter at \$31. Many inquiries are coming from outside of this territory. Larger inquiries pending include 3000 tons of malleable iron for the Eastern Malleable Iron Works, Bridgeport, Conn., 500 tons of foundry iron for the Titusville Iron Works, Titusville, Pa., both for September and October shipment, and 500 tons of malleable iron for the Mount Vernon Car & Mfg. Co., Mount Vernon, Ill., for the fourth quarter. No new inquiries have come out for basic iron, but a local producer would probably quote not less than \$35 for this grade. Low phosphorus iron has advanced \$1 a ton to \$38 on several sales aggregating 1000 tons and including a 500-ton lot. This iron is also very scarce and a Valley producer is evidently the only one that has any low phosphorus iron in stock. Little, if any, Southern iron is being offered in this territory, producers being unwilling to name prices, as they are unable to get cars for shipment. One producer of Ohio silvery iron has announced a price of \$37.50 for 8 per cent silvery and \$46.50 for 10 per cent Bessemer ferrosilicon for delivery during the remainder of the year, or a \$5 advance above the regular schedule. Another furnace that has a small tonnage of the 9 per cent silvery iron available for prompt shipment is offering this at \$43.50 or on a \$41.50 base.

Quotations below are f.o.b. local furnace for Northern foundry iron, not including a 50c. switching charge. Other quotations except basic and low phosphorus are delivered Cleveland, being based on a \$3.02 rate from Jackson and a \$6 rate from Birmingham:

Basic, Valley furnace, nominal.....	\$27.00
Northern No. 2 fdy., sil. 1.75 to 2.25...	35.00
Southern fdy., sil. 1.75 to 2.25.....	30.00 to 31.00
Malleable .....	35.00
Ohio silvery, nom., sil. 8 per cent....	40.52 to 43.52
Standard low phos., Valley furnace...	38.00

**Iron Ore.**—Shipping conditions in the Mesabi district are fairly good, but the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul Railroads are still badly crippled. Consequently, shippers are moving only mine production from the old ranges to Ashland and Escanaba. Ore continues to move freely from lake ports, as the transportation facilities of roads that carry the bulk of the ore are not badly crippled. However, two coal-carrying roads, the Baltimore & Ohio and Wheeling & Lake Erie, are unable to keep up their normal movement of ore.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$5.95; Old range non-Bessemer, 51½ per cent iron, \$5.20; Mesabi Bessemer, 55 per cent iron, \$5.70; Mesabi non-Bessemer, 51½ per cent iron, \$5.05.

**Semi-finished Steel.**—A local mill has sold to an Ohio consumer 3000 tons of sheet bars at \$40 for prompt shipment or an advance of \$2.50 above sales previously reported, but has no more to sell for early delivery. Considerable business in semi-finished steel has been

taken for the fourth quarter subject to prices prevailing at time of shipment.

**Finished Iron and Steel.**—The price tendency continues upward. Premium prices on steel bars, plates and structural material for early shipment were more in evidence the past week than heretofore. A heavy volume of inquiries came out, due evidently to the fact that many consumers wanted to get under contract before prices further advanced. A wide range of quotations is appearing, depending largely on delivery. On steel bars there is a spread of prices from around 1.90c. to 2.25c. and higher. One producer is now offering bars only at warehouse prices. Considerable plate business has been booked at 2.25c. and quotations by independent mills generally range from 2c. to 2.35c. A Valley mill has advanced its car-lot price to 2.50c. An Eastern mill now quotes 2.75c. Local shipyards have new inquiries for three boats requiring 15,000 tons of plates and structural material and Ohio tank shops are figuring on inquiries for tanks requiring 6500 tons of plates. A Buffalo district car builder is inquiring for 2000 tons. The Lima Locomotive Works has taken 40 locomotives for the Missouri, Kansas & Texas Railroad and for these has placed 1200 tons of boiler plates with a local mill. Inquiry for steel for building work continues heavy.

Jobbers quote steel bars, 2.81c.; plates and structural shapes, 2.91c.; No. 9 galvanized wire, 3c.; No. 9 annealed wire, 2.50c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; No. 10 blue annealed sheets, 3.50c. to 3.61c.; hoops and bands, 3.61c.; cold-rolled rounds, 3.60c.; flats, squares and hexagons, 4.10c.

**Sheets.**—Demand for sheets is not as heavy as it has been and only a limited amount of buying is reported for the fourth quarter. Some mills can still make good deliveries. The most common quotations for independent mills are unchanged, at 3.50c. for black; 4.50c. for galvanized and 2.50c. for blue annealed.

**Alloy Steel.**—Alloy steel manufacturers have advanced prices \$5 per ton because of the increased production costs. Mills have large tonnages on their books and cannot make definite delivery promises. The new prices on bars are 5.75c. for 3.50 per cent nickel steel; 4.75c. for chrome nickel steel and 5.25c. for chrome vanadium.

**High Speed Steel.**—The demand for high speed steel has improved, but prices are still irregular. Quotations of 60c. per lb. are being made to large consumers.

**Old Material.**—The market is firmer on nearly all grades and prices are from 50c. to \$1 a ton higher. There is still some demand from dealers for scrap to fill high-priced orders released by the McKinney Steel Co., but virtually no demand from the mills. As high as \$18.50 is being offered for selected steel scrap delivered at the McKinney plant, but \$17.50 more nearly represents the market. Sales during the week range from \$16.50 to \$18.50. Dealers are offering \$15.25 to \$15.50 delivered for compressed steel scrap, and cast iron borings have sold up to \$13.75 delivered. Sales of No. 1 cast scrap to a local foundry are reported at \$16.50 to \$17 per net ton. Higher prices have not brought out much scrap. Some dealers are holding to their yard stock, expecting further advances.

We quote per gross ton, f.o.b. Cleveland, as follows:

Heavy melting steel.....	\$16.75 to \$17.25
Steel rails, under 3 ft.....	16.75 to 17.25
Rails for rolling.....	16.75 to 17.25
Iron rails .....	14.00 to 15.00
Iron car axles.....	18.00 to 19.00
Low phosphorus melting.....	17.25 to 17.75
Cast borings .....	12.75 to 13.00
Machine shop turnings.....	12.25 to 12.50
Mixed borings and short turnings.....	12.25 to 12.50
Compressed steel .....	14.50 to 14.75
Railroad wrought .....	14.00 to 14.50
Railroad malleable .....	16.50 to 16.75
Light bundled sheet stampings.....	11.00 to 11.25
Steel axle turnings.....	13.50 to 14.00
No. 1 cast.....	17.00 to 17.50
No. 1 busheling.....	12.00 to 12.50
Drop forge flashings over 10 in.....	11.50 to 12.00
Drop forge flashings under 10 in.....	11.50 to 12.00
Railroad grate bars.....	13.75 to 14.25
Stove plate .....	13.75 to 14.25
Pipes and flues.....	10.00 to 11.00

**Reinforcing Bars.**—Mills have made another \$2 per ton advance on hard steel reinforcing bars to 2c. Deliveries are very slow. New inquiries include a 300-ton



lot for the Collinwood High School, Cleveland. Local warehouses have made another price advance of \$3 per ton on steel bars, plates and structural material and on cold-rolled steel and \$4 per ton on hoops and bands. Warehouse sales are heavy.

**Coke.**—Sales of 20 carlots of Indianapolis by-product foundry coke are reported at \$15 at oven. A few carlot sales of Connellsville foundry coke were made during the week at \$15, the price that has prevailed recently.

## New York

### Heavy Buying of Foreign Pig Iron—Large Sales of Charcoal Boiler Tubes

NEW YORK, Aug. 29.—Partial settlement of the coal strike on the basis of the Cleveland agreement has not improved the general situation. There has been a temporary easing in the coke market and as low as \$12 has been done on a rather poor grade of furnace coke, but the price tendency is now distinctly upward and furnace coke is quoted at from \$13 to \$14, and foundry grades from \$14 to \$15.50. Many users of anthracite coal, seeing that they probably will not be able to get their usual supplies, are buying coke and bituminous coal. This has strengthened the market for those fuels. Coal can be had at from \$5.25 to \$6.25 a ton, which is a decline of \$1.50 below recent quotations, and compares with \$2 on April 1, when the strike was declared. The outlook is that there will be many complications in getting an increased production of coal and coke, owing to the arbitrary attitude of the labor unions. All reports indicate that the struggle in the Connellsville region is to be a desperate one between the union organizers and sympathizers and the non-union men who have just obtained an advance in wages variously estimated to average from 40 to 47 per cent.

**Pig Iron.**—Activity has been confined during the past week largely to foreign iron, of which one firm has sold 25,000 tons and others about 15,000 tons. A radiator company which was in the market for 5000 tons is credited with purchasing foreign iron, but most of the buying has been in small lots. Scotch iron, analyzing 1.75 to 2.25 silicon, has sold at \$29, c.i.f. New York, French iron of about the same analysis at \$28 and British at \$29. Scotch iron analyzing 2.50 to 3.25 silicon has commanded \$32. Domestic selling has been confined to two furnaces and most of the sales have been made on a basis of \$32 for No. 2 plain and \$33 for No. 2X, although some sales have been made \$1 higher.

We quote delivered in the New York district as follows, having added to furnace prices \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25.	\$36.27 to \$37.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75.	35.27 to 36.27
East. Pa. No. 2 fdy., sil. 1.75 to 2.25.	34.27 to 35.27
Buffalo, sil. 1.75 to 2.25.	34.91 to 35.91
No. 2 Virginia, sil. 1.75 to 2.25.	34.44 to 36.44

**Iron Ore.**—The reduced freight rates on iron ore became effective Monday, but there is very little activity among Eastern operators on account of the limited demand from furnaces, many of which are well supplied with Lake Superior and foreign ores.

**Ferroalloys.**—Sales of moderate amounts of ferromanganese continue to be made for shipment in September, transactions for the week being several hundred tons at the prevailing price. There have also been sales of 1500 to 2000 tons for October shipment. Spot delivery, if available, is slightly higher. There are also other inquiries but the volume is not heavy and operations in the steel mills, together with the large quantities contracted for, tend to make a quiet market. The spiegeleisen market is moderately active, sales aggregating to 1500 tons of both domestic and imported alloy and prices ranging from \$37.50 to \$39, furnace. There are also inquiries before the market. One Eastern steel company is reported to have contracted for a cargo of manganese ore at 28.50c. per unit, seaboard, but there is no marked activity in this market. Specifications on con-

tract for 50 per cent ferrosilicon continue satisfactory and there are also sales of prompt lots at prevailing quotations. The same is true of the ferrochromium market. Quotations are as follows:

Ferromanganese, domestic, seaboard, per ton.	\$67.50
Ferromanganese, British, seaboard, per ton.	\$67.50
Spiegeleisen, 17 to 19 per cent, furnace.	\$38.00
Spiegeleisen, 20 per cent, furnace.	\$39.00
Ferrosilicon, 50 per cent, delivered, per gross ton, carloads.	\$55.00 to \$60.00
Ferrosilicon, 10 to 15 per cent, delivered, per gross ton.	\$38.00 to \$40.00
Ferrotungsten, per lb. of contained metal.	40c. to 50c.
Ferrochromium, 4 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered.	12c. to 14c.
Ferrovanadium, per lb. of contained vanadium.	\$3.00 to \$3.50
Ferrocobaltititanium, 15 to 18 per cent, in carloads, per net ton.	\$200.00

#### Ores

Manganese ore, foreign, per unit, seaboard.	28c. to 30c.
Tungsten ore, per unit, in 60 per cent concentrates, nominal.	\$3.00 up
Chrome ore, basis 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, Atlantic seaboard.	\$15 to \$18.50
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>2</sub> , New York.	42.50c. to 45c.

**Finished Iron and Steel.**—Substantial inquiries for plates, shapes, bars and other finished material are reported, but several large companies are unable to quote because of restricted operations or fully booked mills. Some sellers report sales of various products at advancing prices, or at recently established new prices. The outstanding feature continues to be a scarcity of coal with the amount of relief in sight very uncertain. The danger of a runaway market is admitted, but a restraining factor is the fresh experience of 1920. Some predict a shortage of coal and of cars, the extent of which is hard to measure. One seller would not be surprised to see a 2.50c. market for plates, shapes and bars in the not distant future. Plates are firm at 2.15c. to 2.25c., Pittsburgh, for early delivery from independent producers where obtainable, with shapes and bars at 2c. to 2.25c. Two large inquiries from a large oil company, one for 1000 tons of plates, and another for 4000 to 5000 tons of plates and shapes, 3300 tons of which is plates, has been partly satisfied. The former has been placed with a large Alabama producer, but the latter is still under negotiation. An inquiry for 3000 tons of reinforcing bars from a New Jersey consumer is noted. Sales of bar iron in substantial quantities have been made at advancing prices. There have also been fair transactions in black and galvanized sheets and it is doubtful if the latter can be obtained at less than 4.50c. to 4.60c. for any reasonable delivery from independent producers. There have also been large sales of charcoal boiler tubes. The coal mines of a large independent Pittsburgh steel producer have been started again and, at a meeting of sales representatives later this week, a definite sales policy may be decided. In fabricated steel, inquiries are not as numerous and new business in railroad cars is at a low ebb. It is rumored that the Pennsylvania Railroad is to inquire for 30,000 new cars and the New York Central for 10,000.

We quote for mill shipments, New York delivery, as follows: For indefinite delivery, soft steel bars, structural shapes and steel plates, 2.14c.; for delivery in a number of weeks, soft steel bars, plain structural material and steel plates, 2.34c. to 2.59c.; bar iron, 2.34c.

**Bolts, Nuts and Rivets.**—Bolt and nut manufacturers are getting a good volume of orders largely in specifications on contracts. The market is very firm with talk of higher prices. Specifications on rivet contracts are fairly heavy and production is being hampered by the lack of steel. Some manufacturers are quoting rivets at an advance of \$7 a ton or at 3c. for structural and 3.10c. for boiler rivets for small lot orders and sales have been made at these prices. While the old prices have not been withdrawn, an early general price advance seems probable.

**Cast-Iron Pipe.**—Demand continues heavy and prices are firm. Producers in this district are fairly well situated on fuel, although supplies are low, but there has been some difficulty in obtaining iron shipped by Southern furnaces, which is delayed in transit by the railroad strike. One pipe producer reports that out of 56 carloads recently shipped from the South, he has

received but one. Receipts of foreign iron, however, are aiding materially. No new municipal tenders are noted. We quote per net ton, f.o.b. New York, in car-load lots, as follows: 6-in. and larger \$54.50; 4-in. and 5-in. \$59; 3-in. \$64.80, with \$4 additional for Class A and gas pipe.

**Warehouse Business.**—Effective Aug. 28, quotations in this district on bars, shapes, plates, hoops and bands were again advanced, the second increase this month. Both iron and soft steel bars are now quoted at 2.94c. per lb. base, shapes 3.04c. per lb., plates 3.04c. per lb., hoops 4.14c. per lb. and bands 3.74c. per lb. These prices represent a \$3 per ton advance and are based upon the current mill quotation of 1.95c. per lb. base, Pittsburgh, plus the current freight rates. Effective Aug. 24, blue annealed, black and galvanized sheets, prices on which were not changed when iron and steel items were previously increased, were increased to 4.04 per lb. for No. 10 blue annealed, 4.60c. per lb., base, for black, and 5.60c. per lb., base, for galvanized sheets. Some sellers, however, are still under the market and quotations are being made on black and galvanized as low as 4.35c. per lb. and 5.35c. per lb. Tire steel has been advanced to 2.94c. per lb. with smooth finish at 3.14c. per lb. and toe-calk is now 4c. per lb., an advance of 30c. per 100 lb. over the previous quotation of 3.70c. per lb. Both wrought iron and steel pipe schedules have been advanced. The wrought iron pipe discounts represent an advance of about \$10 per ton. We quote prices on page 584.

**Old Material.**—The market is firm and prices strong, in some instances exhibiting an upward tendency. Steel is in greater demand than cast-iron, but on the whole, buying is not heavy.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$10.50 to \$11.00
Steel rails, short lengths, or equivalent	12.25 to 12.75
Rerolling rails .....	12.50 to 13.00
Relaying rails, nominal.....	27.00 to 28.00
Steel car axles.....	17.00 to 18.00
Iron car axles.....	23.00 to 24.00
No. 1 railroad wrought.....	13.50 to 14.00
Wrought iron track.....	12.25 to 12.75
Forge fire .....	8.00 to 8.50
No. 1 yard wrought, long.....	11.00 to 11.50
Cast borings (clean).....	10.75 to 11.25
Machine-shop turnings .....	9.25 to 10.25
Mixed borings and turnings.....	9.25 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.75 to 10.25
Stove plate .....	11.25 to 11.75
Locomotive grate bars.....	11.50 to 12.00
Malleable cast (railroad).....	11.00 to 11.50
Cast-iron car wheels.....	13.50 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast.....	\$18.50 to \$19.50
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	16.50 to 17.00
No. 1 heavy cast, not cupola size.....	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.) .....	12.00 to 12.50

## British Iron and Steel Market

### Export Premium on Pig Iron Dropped—America Gets Glasgow Tramway Order

LONDON, ENGLAND, Aug. 29 (By Cable).

There have been further American purchases of Cleveland, Scotch and Midland pig iron. Cleveland producers have dropped the export premium on No. 3.

The United States Steel Products Co. has secured the contract for tramway material for Glasgow at £15,000. The lowest British tender was £18,000.

Wales has secured orders for 250,000 boxes of oil plates for Eastern markets at 19¼s. (\$4.29) basis, f.o.b., October to December.

The Otis Steel Co., Cleveland, has placed an order with the Mackintosh-Hemphill Co. for a 40-in., two-high reversing blooming mill for its new steel plant.

## St. Louis

### Granite City Company Ships Pig Iron to Pennsylvania and Other Distant Points

ST. LOUIS, Aug. 29.

**Pig Iron.**—The scarcity of pig iron was emphasized by the sales last week of the Granite City maker for shipments to points logically served by other territories because of freight rates. They sold 3000 tons of low silicon, off grade iron for Wisconsin delivery at a high price; another lot of considerable tonnage for Indiana delivery; another lot of considerable tonnage for Pennsylvania delivery and several small lots for Ohio and Indiana delivery. For this iron the makers obtained the full market price f.o.b. furnace at Granite City, without allowance for freight differential. No other Northern iron was obtainable, largely due to the coal situation. As for Southern iron, there is a serious situation because of the railroad strike. With the exception of a car or two that trickles through owing to sheer luck, there are no arrivals from the South. A Sheffield producer sold two lots, 500 tons and 200 tons respectively. The market may be said to be \$30, Chicago, for Northern iron for prompt shipment, with neither buyers nor sellers inclined to make contracts for forward delivery because of the uncertainty of conditions. Southern iron has been sold at prices ranging from \$22 to \$24, f.o.b. Birmingham. Those who have made purchases are pressing for deliveries. A southern Illinois car company is in the market for 1000 tons of Northern iron. Perhaps there would be more inquiries, but consumers realize conditions and the difficulties in getting iron. Lake Superior charcoal iron has advanced \$3 a ton, making the market \$33 at the furnaces. There is an inquiry before the market for 300 tons of 80 per cent ferrosilicon.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago and \$5.17 from Birmingham and 81 cents average switching charge from Granite City:

Northern foundry, sil. 1.75 to 2.25...	\$32.16
Northern malleable, sil. 1.75 to 2.25...	32.16
Basic .....	32.16
Southern foundry, all rail, sil. 1.75 to 2.25 .....	\$27.17 to 29.17

**Finished Iron and Steel.**—Fabricators report that there has been a brisk demand for their products within the last few days. This situation they attribute to the prospect for an advance in steel, following the announcement of the wage increase in the steel trade. The most important letting for several weeks went to the Mississippi Valley Structural Steel Co., being 1500 tons of structural steel for the new plant of the National Enameling & Stamping Co., Granite City. The award of 1200 tons for the shops of the Louisiana & Arkansas Railway at Stamps, Ark., went to the Virginia Bridge & Iron Co. The most important pending business is the South Side High School, St. Louis, involving about 300 tons of structural steel and 500 tons of reinforcing bars. No new business is being developed in sheets, and warehouses are not crowding manufacturers for deliveries. With the renewal of operations in southern Illinois coal mines, have come a number of inquiries for light rails. Implement manufacturers are showing some interest in buying, and are pressing for deliveries of purchases previously made. Fifteen of the mills of the Granite City steel works have reopened. Warehouses have advanced the price of sheets.

For stock out of warehouse we quote: Soft steel bars, 2.70c. per lb.; iron bars, 2.70c.; structural shapes, 2.80c.; tank plates, 2.80c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold rolled, one pass, 4.85c.; cold drawn rounds, shafting and screw stock, 3.50c.; structural rivets, \$3.35 per 100 lb.; boiler rivets, \$3.45; tank rivets, 7/16 in. and smaller, 60 per cent off list; machine bolts, large, 50 and 10 per cent; small, 50-10 and 10 per cent; carriage bolts, large, 55-5 per cent; small, 60 and 10 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon blank, \$3.50; and tapped, \$3.25 off list.

**Coke.**—The settlement of the coal strike in southern Illinois has had no effect so far in solving the shortage of coke in this territory. Users still are depending largely upon local by-product plants for their supply, although some by-product coke made in Terre Haute is being sold here. There is virtually none to be had from the South because of the railroad situation, and only an occasional car gets through.



**Old Material.**—The market for old material continues to advance, demand and a lack of supplies shooting prices up as high as \$2 a ton. Stocks in hands of dealers are being depleted, and very little material is coming; none at all from the railroads, as they are without the labor necessary to handle it. A number of sales of large tonnage were made during the week.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Old iron rails.....	\$17.75 to \$18.75
Rails for rolling.....	18.00 to 18.50
Steel rails less than 3 ft.....	17.50 to 18.00
Relaying rails, standard section.....	26.00 to 29.00
Cast iron car wheels.....	20.00 to 20.50
No. 1 heavy railroad melting steel.....	17.50 to 18.00
No. 1 heavy shoveling steel.....	17.00 to 17.50
Ordinary shoveling steel.....	16.50 to 17.00
Frogs, switches and guards cut apart.....	16.25 to 16.75
Per Net Ton	
Heavy axle and tire turnings.....	11.50 to 12.00
Steel angle bars.....	15.25 to 15.75
Iron car axles.....	25.00 to 25.50
Steel car axles.....	19.00 to 19.50
Wrought iron bars and transoms.....	20.50 to 21.00
No. 1 railroad wrought.....	14.50 to 15.00
No. 2 railroad wrought.....	13.50 to 14.00
Railroad springs.....	18.00 to 18.50
Steel couplers and knuckles.....	18.00 to 18.50
Cast iron borings.....	11.00 to 11.50
No. 1 bushing.....	13.00 to 13.50
No. 1 railroad cast.....	18.50 to 19.00
Railroad malleable.....	15.50 to 16.00
Machine shop turnings.....	9.50 to 10.00

## Birmingham

### Rapid Advance of Pig Iron Continues in the South

BIRMINGHAM, ALA., Aug. 29.—Firm offers of \$24 for October and November iron in lots of 1000 tons were made to-day and two lots of 500 tons each for the same delivery were booked yesterday at the same price. Some makers will not accept \$24. All spot business is on a base of \$25 with an enormous tonnage being turned down on account of embargoes. The spot market is \$25 and fourth quarter \$24 to \$25 to-day.

**Pig Iron.**—The abrupt advance of Birmingham spot iron from a base of \$20 and \$21 to \$23 and \$25 between Saturday, Aug. 19, and Monday, Aug. 21, was among the most spectacular feats of this market in several years. Before the middle of the week, no spot iron was being sold under \$25. The tonnage booked was not large because in the majority of instances where iron was applied for the makers saw impossibility of making spot delivery; so they declined the business. No fourth quarter iron worth speaking of came to the fore during the week. What was brought to the surface was business quoted on prior to that time, but closed during the week. One lot of 200 tons for fourth quarter brought \$25. The Birmingham makers are holding aloof from the fourth quarter market for the remainder of what they have unsold and waiting on a firmer basis than the excited current one. Raises of wages by the Steel Corporation followed by that of the Alabama coal operators have served to bolster the idea of \$24 to \$25 base for fourth quarter. The most significant sales have been those of Sheffield iron of the Sloss-Sheffield Steel & Iron Co. from its Providence, R. I., yards, first at \$30 base and then at \$35, Providence base. The rail rate from Birmingham is \$9.60, but rail and water is \$7.67.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry silicon 1.75 to 2.25.....	\$23.00 to \$25.00
Basic.....	22.00 to 24.00
Charcoal warm blast.....	32.00 to 34.00

**Finishing Mills.**—There has been no change in practically a 100 per cent production in Alabama finishing mills with the exception of the Connors Steel Co.'s reducing from two to one mill. The Tennessee company continues double turn at Bessemer, Ensley and Fairfield mills and 100 per cent of ingot capacity. The 20 per cent wage advance effective Sept. 1 will affect approximately 8000 employees of the Tennessee company and 2000 employed in other steel mills. The Tennessee company's lead was generally followed throughout the Birmingham district and in Alabama.

**Cast Iron Pipe.**—Several orders for good tonnages of pressure pipe followed the advance from the base of \$37 to that of \$38.50, the American Cast Iron Pipe Co. booking 600 tons for Martinsville, Ohio, and North Carolina towns placing several orders with the United States Cast Iron Pipe & Foundry Co. Sanitary pipe is firm at \$65 and a lot of new business has been booked. Stocks are piling, but operations have not been curtailed.

**Coal and Coke.**—Alabama coal operators, following the lead of the Tennessee company's wage advances and adjustments, have announced a mine wage advance of approximately 20 per cent effective Sept. 1 and affecting 27,000 men. Spot coal rules from \$3.50 up and spot coke rules at \$7 to \$10 with an especially large business done at \$8. New England is taking a large tonnage of coke at \$8 via steamers out of Southern ports. The Western distress demand is as great as ever, but the car and locomotive situation grows worse and production has not gotten beyond 400,000 tons on a call for fully 500,000 tons a week.

**Old Material.**—The scrap market is stronger and if the present spot prices for pig iron find themselves in the price for fourth quarter metal scrap will rise materially. Yard men are inclined to hold for advances over the present quotations and small consumers are paying from \$1 to \$2 over the scale for spot deliveries.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails.....	\$13.00 to \$15.00
No. 1 steel.....	12.00 to 15.00
No. 1 cast.....	15.00 to 16.00
Car wheels.....	15.00 to 16.00
Tramcar wheels.....	14.00 to 15.00
Stove plate.....	13.00 to 14.00
Cast iron borings.....	6.00 to 7.00
Machine shop turnings.....	4.00 to 5.00

### De Lavaud Process Tested

BIRMINGHAM, ALA., Aug. 28.—The De Lavaud pipe casting machines installed at the North Birmingham plant of the United States Cast Iron Pipe & Foundry Co. have been tested on 6, 8- and 10-in. sizes of pipe and the tests have been more than satisfactory to factory experts. Presumably tests on 12-in. sizes will also be satisfactory. This pipe is now practically ready for the market and early announcement to that effect is expected together with price schedules.

## Cincinnati

### Pig Iron Prices Advance \$3 to \$5 Per Ton—Very Little Is Obtainable

CINCINNATI, Aug. 28.—Steadily advancing prices with a steady diminution of the available supply of pig iron featured the market during the week. While practically all inquiries are for prompt shipment, a number of melters have tested the market for fourth quarter delivery, and the net result of their efforts has been to get quotations from about two furnaces in the entire country. Should improvement in the railroad situation be delayed for a month or six weeks, many in the trade are looking for a return of the high prices prevailing in the early part of 1920.

**Pig Iron.**—The available supply of pig iron is very small. There is very little coming in from the South, though occasional shipments are being made by furnaces using the river and rail route. Northern furnaces are in better shape as regards transportation, but cannot begin to take care of the needs of their customers, as practically all of them are now sold up for the entire third quarter. Prices are from \$3 to \$5 higher than last week, and sales of Southern iron have been made as high as \$27, Birmingham. The market, however, can be quoted at \$23 to \$25, the former price having been named by at least two furnaces for fourth quarter, while the latter applies to September shipments. Included in sales are one of 700 tons and one of 1000 tons, both at the minimum figure quoted above. Southern

Ohio iron, in carload lots, brought \$33, Ironton base, last week, but on a 500-ton sale \$30 was done. This interest has since raised its price to \$31 for prompt shipment, and has taken 300 tons at this figure. One silvery furnace has advanced its price on 8 per cent to \$41.50, but we note a sale of 1000 tons and 700 tons respectively for fourth quarter at \$37.50 for 8 per cent, and this can still be done. Other sales of Northern foundry iron include two lots of 1000 tons each to a radiator company, 500 tons of malleable, and several ranging from 100 to 300. An inquiry for an unstated tonnage for fourth quarter and first quarter of next year is current from a piano plate manufacturer, and a central Ohio malleable foundry is asking for 500 tons for the fourth quarter. Jisco silvery furnace is scheduled to go in blast Sept. 15.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$27.05 to \$29.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	27.55 to 29.55
Ohio silvery (nominal), 8 per cent	39.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	33.77 to 35.77
Basic Northern	28.77
Malleable	33.77 to 35.77

**Finished Material.**—It is becoming more difficult to place orders for finished materials, as mills are not in a position to make deliveries, and with uncertainty of future operations, are advising buyers that for the present at least all energies will be devoted to clearing up orders now on the books. There continues to be a good demand for early delivery, and many consumers are anxious to place orders for fourth quarter. Prices are steadily advancing, a fair tonnage of plates for immediate delivery having been placed with a Valley mill at 2.15c. On bars and shapes 2c. to 2.10c. for delivery within eight to ten weeks has been quoted, but 2c. seems to be the prevailing price for indefinite delivery. Some sheet mills have been taking small orders for early delivery on the basis of 2.60c. for blue annealed, 3.50c. for black and 4.50c. for galvanized, but are not quoting these prices through the fourth quarter. The American Sheet & Tin Plate Co. has taken a fair tonnage of fourth quarter business at its recently announced prices. While the American Steel & Wire Co. has not yet met advances of independent companies in nail and wire prices, it is expected that an announcement will be made shortly advancing wire products approximately \$4 per ton. Tank builders in the district are busy, as are railroad equipment companies on repair work. The Indiana Railroad Co. is inquiring for 500 tons of 100-lb. A.E.R.A. rails for delivery at Indianapolis. It is expected that the Louisville & Nashville Railroad will shortly issue an inquiry for 25 locomotives, for use on the Corbin, Ky., branch. The demand for reinforcing bars continues good, an inquiry having been received for 500 tons for a stadium for the University of Illinois at Champaign, Ill., the general contract for which has been awarded. A warehouse at Covington, Ky., will take approximately 200 tons of bars, and miscellaneous inquiries for smaller buildings total in the neighborhood of 1000 tons. A number of new projects appeared in the structural field, the principal one being the new plant for the Fay & Egan Co., Cincinnati, bids for which will be received until Sept. 11. This project will take approximately 900 tons.

**Warehouse Business.**—Local jobbers report business continuing in good volume, with inquiries being received from many points outside the district. Light angles and reinforcing bars are very active, and black and galvanized sheets are moving well. Nails are also in fair demand. There have been no further price changes, although it is expected that black and galvanized sheets will be advanced approximately \$4 a ton during the coming week, with nails taking a 15c. advance on Sept. 1.

Cincinnati jobbers quote: Iron and steel bars, 2.85c. base; reinforcing bars, 2.95c. base; hoops, 3.85c. base; bands, 3.60c. base; shapes and plates, 2.95c. base; cold-rolled rounds, 3.65c. base; cold-rolled flats, squares and hexagons, 4.15c. base; No. 10 blue annealed sheets, 3.75c.; No. 28 black sheets, 4.50c.; No. 28 galvanized sheets, 5.50c.; No. 9 annealed wire, \$2.70 per 100 lb.; common wire nails, \$2.85 per keg, base.

**Coke.**—Connellsville foundry coke is easier at \$14 to \$15. New River is quoted at \$14 to \$15; Wise County

at \$13, and Pocahontas at \$14. Producers have named \$11, Connellsville basis, as the price for September shipments, and the Indianapolis producer is holding its tonnage at \$15, ovens. Southern coke is quoted at \$8, ovens. We note one sale of 2000 tons and one of 700 tons to Michigan melters.

**Old Material.**—The scrap market is very strong and fairly active. A district steel plant purchased a round tonnage of open-hearth grades last week, and a better demand from outside districts is also reported. Scarcity of pig iron is also creating a demand for machinery cast. Prices generally are higher and dealers are of the opinion they may go even higher. Shipments are becoming increasingly scarce, but yard stocks are in fair shape.

We quote dealers' buying prices, f.o.b. cars (Cincinnati):

Per Gross Ton	
Bundled sheets	\$9.50 to \$10.00
Iron rails	15.50 to 16.00
Relaying rails, 50 lb. and up	26.00 to 27.00
Plans for rolling	14.50 to 15.00
Heavy melting steel	14.50 to 15.00
Steel rails for melting	14.00 to 14.50
Car wheels	16.50 to 17.00
Per Net Ton	
No. 1 railroad wrought	13.00 to 13.50
Cast borings	10.00 to 10.50
Steel turnings	9.00 to 9.50
Railroad cast	16.00 to 16.50
No. 1 machinery	19.00 to 19.50
Burnt scrap	10.50 to 11.00
Iron axles	19.50 to 20.00
Locomotive tires (smooth inside)	12.50 to 13.00
Pipes and flues	7.50 to 8.00

## Boston

### Sales of Foreign Iron Increase as Alabama Furnaces Retire from Market

BOSTON, Aug. 29.

**Pig Iron.**—The withdrawal of Alabama furnace interests from the market reduced sales of Southern iron to a minimum the past week. Sales of foreign iron increased as a result, amounting to 6000 to 7000 tons. One house sold 2800 tons of "Continental," silicon 2.25 to 2.75 iron, October and November shipment, at \$26.75 c.i.f. Boston, and French was offered at \$24 to \$25 and English at \$25.50 to \$27 c.i.f. here. Most of the iron sold in this territory, however, was No. 3 Scotch at \$29 and \$32, and higher silicon at \$33, c.i.f. Boston, prices quoted last week. Local houses are informed Scotch iron supplies for September shipment are now limited due to purchases by Germany, so no weakening in values is anticipated. Boston firms the past week also sold English silicon 2.50 plus to Cincinnati melters at \$32 c.i.f. dock here, and Scotch and English silicon 3.50 plus to western New York foundries at \$33, September shipment, several thousand tons being involved. Sales for the week included more than 500 tons of Lake charcoal iron at \$33 furnace base, an advance of \$3, and small tonnages of Alabama high silicon spot iron at \$25 furnace base, an advance of \$5, as well as small tonnages of Alabama at \$35 dock Providence, R. I., where the movement is hampered by a lack of cars. Several large tonnages, including one for 2000 tons Belgian or Alabama from a textile machinery maker, and many small lots are under negotiation.

We quote delivered prices, on the basis of the latest reported sales, now infrequent, and as follows, having added to furnace prices \$3.65 freight from eastern Pennsylvania: \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	\$36.15 to \$37.15
East. Penn., sil. 1.75 to 2.25	35.65 to 36.65
Buffalo, sil. 2.25 to 2.75	40.41
Buffalo, sil. 1.75 to 2.25	39.91
Alabama, sil. 2.25 to 2.75	31.10 to 32.10
Alabama, sil. 1.75 to 2.25	30.60 to 31.60

**Warehouse Business.**—Warehouse prices on iron and steel are mixed. The two largest interests hold to \$2.85½ for steel bars. One fairly important house is on a \$3 base, and most of the others are asking as much on those sizes in small supply. For instance, stocks of ¼ in., ½ in. and 1 in. steel rounds are badly broken, and a majority of the trade quotes these sizes at \$3. Popular sizes of flats, as well as 1½ in. and 1¼ in. angles are in short supply, and generally quoted at

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# Prices Finished Iron and Steel, f.o.b. Pittsburgh

**Plates**  
Sheared, best quality, base, per lb. 2.00c. to 2.25c.

**Structural Material**  
Beams, channels, etc. 2.00c. to 2.25c.

**Iron and Steel Bars**  
Soft steel bars, base, per lb. 1.90c. to 2.25c.  
Refined iron bars, base, per lb. 2.35c.

**Hot-Rolled Flats**  
Hoops, base, per lb. 2.75c.  
Bands, base, per lb. 2.75c.  
Strips, base, per lb. 2.75c.  
Cotton ties, per bundle of 45 lb. \$1.11

**Cold-Finished Steels**  
Bars and shafting, base, per lb. 2.25c. to 2.50c.  
Strips, base, per lb. 4.25c.

**Wire Products**  
Nails, base, per keg \$2.40 to \$2.60  
Bright plain wire, base, per 100 lb. 2.25 to 2.35  
Annealed fence wire, base, per 100 lb. 2.25 to 2.35  
Galvanized wire, base, per 100 lb. 2.75 to 2.85  
Galvanized barbed, base, per 100 lb. 3.05 to 3.15  
Galvanized staples, base, per keg 3.05 to 3.15  
Painted barbed wire, base, per 100 lb. 2.55 to 2.65  
Polished staples, base, per keg 2.55 to 2.65  
Cement coated nails, base, per count keg 1.90c. to 2.10c.  
Woven fence, carloads (to jobbers) 73 per cent off list  
Woven fence, carloads (to retailers) 70 1/2 per cent off list

**Bolts and Nuts**  
Machine bolts, small, rolled threads, 60, 10 and 10 per cent off list  
Machine bolts, small, cut threads. 60 and 10 per cent off list  
Machine bolts, larger and longer. 60 and 10 per cent off list  
Carriage bolts, 3/4 x 6 in.:  
Smaller and shorter, rolled threads. 60 and 10 per cent off list  
Cut threads. 60 per cent off list  
Longer and larger sizes. 60 per cent off list  
Lag bolts. 60, 10 and 10 per cent off list  
Pilot bolts, Nos. 1, 2 and 3 heads. 50 and 10 per cent off list  
Other style heads. 20 per cent extra  
Machine bolts, c.p.c. and t. nuts, 3/4 x 4 in.:  
Smaller and shorter. 50 and 10 per cent off list  
Larger and longer sizes. 50 and 10 per cent off list  
Hot pressed square or hex. blank nuts. \$4.50 off list  
Hot pressed nuts, tapped. \$4.50 off list  
C.p.c. and t. sq. or hex. nuts, blank. \$4.00 to \$4.50 off list  
C.p.c. and t. sq. or hex. nuts, tapped. \$4.00 to \$4.50 off list  
Semi-finished hex. nuts:  
3/4 in. and smaller, U. S. S. 80 to 80 and 10 per cent off list  
3/4 in. and larger, U. S. S. 75 to 75 and 10 and 10 per cent off list  
Small sizes, S. A. E. 80, 10 and 10 per cent off list  
S. A. E. 3/4 in. and larger. 75 and 10 and 10 per cent off list  
Stove bolts in packages. 80 and 5 per cent off list  
Stove bolts in bulk. 80, 5 and 2 1/2 per cent off list  
Tire bolts. 65 per cent off list

**Cap and Set Screws**  
Milled square and hex. head cap screws, 75 and 10 per cent off list  
Milled set screws. 75 per cent off list  
Upset cap screws. 80 per cent off list  
Upset set screws. 80 and 5 per cent off list

**Rivets**  
Large structural and ship rivets, base, per 100 lb. \$2.65 to \$3.00  
Large boiler rivets, base, per 100 lb. 2.75 to 3.10  
Small rivets. 70 per cent off list

**Track Equipment**  
Spikes, 5/16 in. and larger, base, per 100 lb. \$2.75  
Spikes, 1/2 in. and smaller, base, per 100 lb. 3.25  
Spikes, boat and barge, base, per 100 lb. 3.25  
Track bolts, base, per 100 lb. \$3.50 to 3.75  
Tie plates, per 100 lb. 2.25  
Angle bars, base, per 100 lb. 2.40

**Welded Pipe**  
Butt Weld  
Inches Steel Black Galv. Iron Black Galv.  
1/4 to 3/4 51 1/2 26 1/4 to 3/4 + 1 1/2 + 27 1/2  
1/2 to 1 57 31 1/2 1/2 to 1 31 1/2 13 1/2  
1 1/2 to 2 62 48 1/2 3/4 to 1 37 1/2 22 1/2  
2 to 3 66 54 1/2 1 to 1 1/2 39 1/2 24 1/2  
3 to 4 68 56 1/2

**Lap Weld**  
2 49 1/2 2 34 1/2 20 1/2  
2 1/2 to 6 65 53 1/2 2 1/2 to 6 37 1/2 24 1/2  
7 to 8 62 49 1/2 7 to 8 35 1/2 22 1/2  
9 to 12 61 48 1/2

**Butt Weld, extra strong, plain ends**  
1/4 47 1/2 31 1/4 to 3/4 + 9 1/2 + 42 1/2  
1/4 to 3/4 53 36 1/2 1/2 30 1/2 18 1/2  
1/2 59 48 1/2 3/4 37 1/2 23 1/2  
3/4 64 53 1/2 1 to 1 1/2 39 1/2 25 1/2  
1 to 1 1/2 66 55 1/2  
2 to 3 67 56 1/2

**Lap Weld, extra strong, plain ends**  
2 48 1/2 2 35 1/2 22 1/2  
2 1/2 to 4 63 52 1/2 2 1/2 to 4 38 1/2 26 1/2  
4 1/2 to 6 62 51 1/2 4 1/2 to 6 37 1/2 25 1/2  
7 to 8 58 45 1/2 7 to 8 30 1/2 18 1/2  
9 to 12 52 39 1/2 9 to 12 25 1/2 13 1/2

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2 1/2 per cent.

**Boiler Tubes**  
Lap Welded Steel Charcoal Iron  
1 3/4 in. 23 1/2 1 1/2 in. + 2  
2 to 2 1/4 in. 38 1 3/4 to 1 1/2 in. 8  
2 1/2 to 3 in. 49 2 to 2 1/4 in. 18  
3 1/4 to 3 in. 54 2 1/2 to 3 in. 23  
3 1/4 to 4 1/2 in. 25

To large buyers of steel tubes a supplementary discount of 5 per cent is allowed.

**Standard Commercial Seamless Boiler Tubes**  
Discounts on cold-drawn tubes in carload lots, f.o.b. Pittsburgh, follow:

1 in. 57 2 1/2 and 2 3/4 in. 40  
1 1/4 and 1 1/2 in. 49 3 in. 44  
1 3/4 in. 33 3 1/4 to 4 in. 49  
2 and 2 1/4 in. 36 4 1/4 in. and 5 in. 41

**Hot Rolled**  
3 in. 46 3 1/4 to 4 in. 51  
Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

**Seamless Mechanical Tubing**  
Carbon under 0.30, base, 85 per cent off list. Carbon 0.30 to 0.40, base, 83 per cent off list. Plus usual differentials and extras for cutting.

**Seamless Locomotive and Superheater Tubes**  
Cents per Ft. Cents per Ft.  
2-in. O.D. 12 gage. 13 2 1/4-in. O.D. 10 gage. 17 1/4  
2-in. O.D. 11 gage. 14 3-in. O.D. 7 gage. 33  
2-in. O.D. 10 gage. 15 1 1/2-in. O.D. 9 gage. 13  
2 1/4-in. O.D. 12 gage. 15 5/8-in. O.D. 9 gage. 51  
2 1/4-in. O.D. 11 gage. 16 5 1/2-in. O.D. 9 gage. 53

**Tin Plate**  
Standard cokes, per base box. \$4.75

**Terne Plate**  
(Per package, 200-lb.)  
8-lb. coating \$9.30 25-lb. coating I. C. \$14.25  
8-lb. coating I. C. 9.60 30-lb. coating I. C. 15.25  
15-lb. coating I. C. 11.80 35-lb. coating I. C. 16.25  
20-lb. coating I. C. 13.00 40-lb. coating I. C. 17.25

**Sheets**  
**Blas Annealed**  
Nos. 9 and 10 (base), per lb. 2.50c. to 2.60c.

**Box Annealed, One Pass Cold Rolled**  
No. 28 (base), per lb. 3.35c. to 3.50c.

**Galvanized**  
No. 28 (base), per lb. 4.35c. to 4.50c.

**Tin-Mill Black Plate**  
No. 28 (base), per lb. 3.35c. to 3.50c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

## Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic. \$0.325	Buffalo. \$0.265	St. Louis. \$0.43	Pacific Coast. \$1.50
Philadelphia, export. 0.265	Cleveland. 0.215	Kansas City. 0.735	Pac. Coast, ship plates 1.20
Baltimore, domestic. 0.315	Cleveland, Youngstown	Kansas City (pipe). 0.705	Birmingham. 0.69
Baltimore, export. 0.255	Comb. 0.19	St. Paul. 0.595	Memphis. 0.385
New York, domestic. 0.34	Detroit. 0.295	Omaha. 0.735	Jacksonville, all rail. 0.50
New York, export. 0.285	Cincinnati. 0.295	Omaha (pipe). 0.705	Jacksonville, rail and
Boston, domestic. 0.365	Indianapolis. 0.31	Denver. 1.275	water. 0.415
Boston, export. 0.285	Chicago. 0.34	Denver (pipe). 1.215	New Orleans. 0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha, and Denver the minimum carload is 45,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 30c. to 40c.; sheets and tin plates, 50c.; rods, wire rope, cable and strands, 75c.; wire fencing, netting and stretcher, 50c.; pipe, not over 8 in. in diameter, 50c.; over 8 in. in diameter, 2 1/2c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

## Iron and Steel Markets

(Concluded from page 568)

advanced prices. Warehouses are well covered on small sizes, but mills are unable to make shipments. Some substitution of iron for steel bars is noted. Local wire nail prices remain unchanged notwithstanding reports of a shortage before the turn of the year. Some firms have more bolt and nut business than they can properly handle, while others say the movement out of stock is only fair at best.

Jobbers quote: Soft steel bars, \$2.85½ per 100 lb. base; flats, \$3.50½; concrete bars, \$3 to \$3.13; structural steel, \$2.85½ to \$3.05½; tire steel, \$4.25 to \$4.60; open-hearth spring steel, \$4.50 to \$6; crucible spring steel, \$11.50; steel bands, \$4; hoop steel, \$4.50; cold rolled steel, \$3.65 to \$4.15; refined iron, \$2.85½; best refined iron, \$4.25; Wayne iron, \$5.50; Norway iron, \$6 to \$6.50; plates, \$2.95½ to \$3.15; No. 10 blue annealed sheets, \$4 per 100 lb. base; No. 28 black sheets, \$5.15; No. 28 galvanized sheets, \$6.15.

**Soil Pipe.**—New England makers of soil pipe have advanced prices \$7 a ton, as compared with \$6 by the big producers. No letup in the demand for this product is noted. Pennsylvania and other makers outside this territory are reported considerably behind on deliveries, while New England makers are in a position to make spot deliveries, which accounts for the higher prices quoted by them. The general market on soil pipe is 33, 10 and 5 per cent discount from list prices.

**Coke.**—New business in foundry coke is confined to English and Alabama brands, both the New England Coal & Coke Co. and the Providence Gas Co. confining activities to contract deliveries on a basis of \$16.50 delivered where the local freight does not exceed \$3.10. Several thousand tons of English coke sold the past week on a basis of \$15 to \$16 c.i.f. dock here, both to New England and New York State foundries. The steamship Norfolk Maru with a cargo of English coke is due shortly and the Maron Lovatt is loading abroad this week for Boston. A cargo of Sloss by-product foundry coke is loading for New England and is expected to arrive within two weeks. This coke is offered at \$19 delivered subject to prior sale and confirmation. Present plans call for shipments of 50,000 tons of this Alabama coke into New England this year, deliveries to be made at Bridgeport, Conn., Providence, R. I., Boston, and Portland, Me.

**Old Material.**—Dealers' prices for old material at yards are firmer on expectations of increased business within the next two months. Little material is coming out and floating supplies are easily absorbed, but the market really is less active than it was a week ago. New inquiries from Pennsylvania mills have dropped to unimportant tonnages, and New England users, generally speaking, have enough stock on hand or on contract to cover requirements the rest of 1922. Heavy melting steel the past week sold in a small way at \$17, Pittsburgh, which brings the local price down to around \$11.50. Within the last few days, dealers have offered \$12 on cars, shipping point. The demand for mixed borings and turnings has dropped almost to the vanishing point, following the withdrawal of a West Virginia mill from the market. Rejections are exceptionally heavy, according to local dealers. Chemical borings are in demand, dealers in some instances offering as high as \$12.50 on cars, shipping point, for them. Shafting also is wanted, but consumers refuse to raise bids, and sales therefore are restricted. New England foundries continue to show little interest in cast scrap.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$19.00 to \$20.00
No. 2 machinery cast.....	17.00 to 18.00
Stove plate .....	15.00 to 16.00
Railroad malleable .....	15.50 to 16.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.50 to \$12.00
No. 1 railroad wrought.....	12.50 to 13.00
No. 1 yard wrought.....	10.00 to 11.00
Wrought pipe (1-in. in diam., over 2 ft. long).....	8.50 to 9.00
Machine shop turnings.....	8.50 to 9.00
Cast iron borings, rolling mill.....	9.50 to 10.00
Cast iron borings, chemical.....	11.50 to 12.50
Blast furnace borings and turnings..	8.75 to 9.50
Forged scrap and bundled skeleton..	8.00 to 8.50
Street car axles.....	17.50 to 18.00
Shafting .....	16.00 to 16.50
Rerolling rails.....	11.00 to 12.00
Street car wheels.....	13.50 to 14.00

## San Francisco

Moderate Trading in Foreign Iron and Coke  
—Price Trend Is Upward

SAN FRANCISCO, Aug. 23.

**Pig Iron.**—The market on the Coast has not shown any great expansion of activity during the past fortnight. A moderate business in foreign iron has been done, perhaps around 1000 tons for Los Angeles and San Francisco together. This tonnage comprises both English and Belgian materials, and is for late August, early September delivery. It is understood prices were around \$29, ex-ship, coast ports. At present there appears to be an upward trend in prices of foreign pig iron, probably resulting from higher exchange rates and firmness in original markets. Domestic material is still neglected here, as prices and delivery favor the foreign. Foundries report a steady current business, but the volume of their operations does not seem to be materially larger than that which has been prevailing for several months.

**Finished Iron and Steel.**—A moderately good business is being done in iron and steel products along the Coast, perhaps the most consistent feature being the building industry. Reports from all parts of the State suggest a very satisfactory development in real estate construction, and in the urban centers the volume of large and medium commercial buildings, and the better class steel-frame apartment houses, is unusually large. Steel interests report a continuation of steady demand for structural materials, usually in moderate quantities. Local mills have advanced their prices on concrete reinforcing bars from \$2.55 to \$2.80, f.o.b. cars, San Francisco. The situation in the heavy materials is not particularly active, although some regular business is being handled. It seems that consumers are disposed to await the settlement of the strikes and other transportation uncertainties before taking on more stocks than are essential for current needs. Some items are reflecting the upward tendency in prices, but the Steel Corporation level on plates, shapes and sheets is fairly well adhered to, except by those interests which are offering prompt shipment at premiums.

**Cast-Iron Pipe.**—Quietness still pervades this market, possibly intensified by the industrial conditions of the country. Buyers are holding off, awaiting a settlement of difficulties. The only business of consequence has come from municipal sources. Los Angeles has just closed for 3000 tons of 4-6-8-in. pipe. Healdsburg closed last week for 145 tons of 4 to 8-in. Prices in some cases have been advanced about \$1.50 per ton, making the new delivered price from \$51.50 to \$52 for 6-in. Shops are generally sold up for several months. Soil pipe factors are doing very little at present, as both buyers are hesitant and mills are not encouraging any volume of new business. No change in prices.

**Coke.**—Offerings of foreign material continue liberal, and buyers are taking steadily for their immediate needs. No particularly large sales were reported for the two-week period, but the total amount of business is estimated to aggregate some 1000 tons. This English coke is scheduled for late August and early September shipment. The price was close to \$17.50, ex-ship. The foundry trade was the principal buyer. Domestic prices are quoted higher here, following strike developments, and beehive was named at as high as \$12.50, f.o.b. ovens, West Virginia. By-product coke is held around \$8.50, f.o.b. Birmingham. At these prices the amount of business transacted is very small.

**Old Material.**—Very little business is to be reported in scrap over the past two weeks. The regular routine requirements were taken care of, and that was about all. One merchant reports having sold three cars of cast iron scrap at \$24 per net ton, delivered at consumer's plant; but it is understood that a firm offer would bring lower prices, as the market is generally considered from around \$22 to \$23. Heavy melting steel showed no activity of any consequence, but prices appear to be holding to the \$11 level established a few weeks ago.



# NON-FERROUS METALS

## The Week's Prices

Cents Per Pound for Early Delivery

Aug.	Copper, New York		Straits Tin		Lead		Zinc	
	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis	
22	14.12½	13.75	32.37½	5.90	5.55	6.60	6.25	
23	14.12½	13.62½	32.12½	5.90	5.55	6.60	6.25	
24	14.12½	13.62½	31.87½	5.90	5.55	6.60	6.25	
25	14.12½	13.75	...	5.90	5.55	6.60	6.25	
26	14.12½	13.75	32.05	5.90	5.55	6.60	6.25	
28	14.12½	13.75	32.30	5.90	5.55	6.60	6.25	
29	14.12½	13.75	...	...	...	...	...	

\*Refinery quotations.

## New York

NEW YORK, Aug. 29.

Moderate activity prevails in most of the markets and prices are steady to firm. Buying of copper is not heavy and prices are steady. The tin market is dull, with prices fluctuating with conditions in London. Buying of lead is steady and prices are firm. The market for prime Western zinc has stiffened slightly, but demand is not active.

**Copper.**—There is some hesitancy on the part of consumers to enter the market in a large way, but domestic demand is reported as fairly good. In the latter part of last week there was one producer which took some business at 13.87½c., delivered, but this situation no longer prevails and it is not possible to buy from first hands electrolytic copper at less than 14c., delivered, or 13.75c., refinery, the quotation which has prevailed for some time. There has been and still may be a little resale metal available at slightly under the market, but it is not an important factor. Some producers will not even sell at 14c., delivered, but are asking ¼c. to ½c. higher for any delivery this year. The business referred to as having been booked under 14c., delivered, last week is understood to have been for delivery not earlier than November. Lake copper continues unchanged at 14c. to 14.25c., delivered.

**Tin.**—The week as a whole has been a quiet one in Straits tin, total sales having amounted to not more than 500 tons, mostly prompt and nearby delivery, with the latter position neglected, although a little business was done in far-off shipments. Consumers are naturally hesitating in this as in other markets because of the coal and railroad situation. Prices for Straits tin here are generally below the cost to import and foreign sellers cannot compete with local sellers. A little business was done yesterday in spot Straits at 32c. to 32.12½c., most of it going at 32c. In the market to-day moderate sales of spot and nearby have been made at 32.25c. to 32.37½c., with the quotation for spot Straits at 32.30c., New York. The London market to-day was about £1 per ton less than a week ago, at £159 10s. for spot standard, £159 15s. for future standard and £160 for spot Straits. Arrivals thus far this month have been 3140 tons, with 5990 tons reported afloat.

**Lead.**—A moderate demand is reported by most sellers and the market is steady at the quotations prevailing a week ago, except that in the West the metal can be obtained in the outside market at 5.55c., St. Louis. The quotation in New York is the same for both the leading interest and independents at 5.90c., New York, but the quotation of the former at St. Louis is 15 points higher than the outside market at 5.70c.

**Zinc.**—Prime Western has advanced slightly during the week and is now quoted at 6.25c., St. Louis, and 6.60c., New York, as a minimum. The market is firm and business is light, consumers not entering the market to any great extent and producers disinclined to press their product. It is possible to buy prime Western to the end of the year at the same prices prevailing for the early positions. It is reported that prospects

for coal in the zinc smelting districts of the West are none too good and there are those who fear a reduction in output.

**Antimony.**—The general situation is unchanged and wholesale lots for early delivery are quoted at 5.25c. per lb., duty paid, New York.

**Aluminum.**—Wholesale lots of virgin metal, 98 to 99 per cent pure, are quoted by the leading interest at 19.10c., f.o.b. plant, for early delivery, with the same grade of foreign metal obtainable from importing dealers at 17.75c. to 18c., duty paid.

**Old Metals.**—Business is quiet but values are fairly stationary. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.50
Copper, heavy and wire.....	12.75
Copper, light and bottoms.....	11.25
Heavy machine composition.....	10.50
Brass, heavy.....	8.25
Brass, light.....	6.50
No. 1 red brass or composition turnings.....	9.00
No. 1 yellow rod brass turnings.....	7.50
Lead, heavy.....	5.00
Lead, tea.....	4.00
Zinc.....	3.75

## Chicago

AUG. 29.—While there has been no particular pressure to sell, business has been unsatisfactory and prices of lead, zinc and tin have weakened. The only recent buying of note has been the closing of first quarter business in copper at current prices. The failure of future buying to bring out a premium is an unfavorable sign. Old metal prices are unchanged. We quote, in carload lots, lake copper, 14.25c.; tin, 33c. to 33.50c.; lead, 5.65c.; spelter, 6.30c.; antimony, 7c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9.25c.; red brass, 8.75c.; yellow brass, 6.75c.; lead pipe, 4.50c.; zinc, 3.50c.; pewter, No. 1, 20c.; tin foil, 22.50c.; block tin, 26c., all buying prices for less than carload lots.

## St. Louis

AUG. 29.—Lead was stronger for the week, advancing 10 to 15 points to 5.65c. to 5.70c., car lots, while slab zinc was steady at 6.25c. to 6.35c. On old metals we quote light brass, 3.50c.; heavy red brass and light copper, 7c.; heavy yellow brass, 4c.; heavy copper and copper wire, 7.50c.; zinc, 2c.; lead, 3c.; pewter, 15c.; tin foil, 16c.; tea lead, 2c.; aluminum, 9c.

## Wages of Puddlers Advanced

PITTSBURGH, Aug. 29.—The average price of bar iron shipments in the 60 days ended Aug. 20 as disclosed in the bi-monthly examination of the sales books of selected manufacturers in the Midwestern district at Youngstown yesterday was 1.70c. This is an advance of 10c. per lb. over the April-June average and means an increase of two points or 40c. per ton increase in the boiling rate to be paid in the September-October period. The new boiling rate is \$8.93 per ton. Puddlers in the July-August period were paid \$8.53 based on the 1.60c. card.

## New Weirton Steel Mill

The Weirton Steel Co., Weirton, W. Va., which will soon start work on the construction of a new sheet mill, is expected to begin placing the contracts shortly for the mills and equipment. This plant is to consist of eight hot mills arranged in two trains of four mills, each train to be driven by 1200-hp. motor and also four cold mills. This plant will make black and galvanized and special sheets and will provide work for 600 additional men.

## PERSONAL

Arthur J. Grey of New York has been appointed American Commodity Trade Commissioner in Berlin



ARTHUR J. GREY

and will sail on the President Harding Sept. 6. His selection follows the policy of the Department of Commerce to select men who have a practical knowledge of various industries in order to promote the interests of American manufacturers to the greatest extent. Mr. Grey's appointment is of particular value to the machinery trade, as he has spent seven years in machine building, and in addition to this has devoted four years to law practice, dealing with technico-legal and commercial problems, such as immigration, unemployment and industrial con-

ditions in New York. For nine years he taught machine construction and design and commercial law in the New York day and evening schools. For the past six years, Mr. Grey has been engaged in foreign trade, first as a traveling representative in France and Belgium for American companies, and later as principal with offices in New York, Paris and Buenos Aires. His early education was received in the public schools of New York and New Jersey. He graduated from New York University in 1898 with the degree of Bachelor of Laws and in 1912 received the degree of Bachelor of Science from the same institution. Until his departure for Europe, Mr. Grey is making his headquarters at the Bureau of Foreign and Domestic Commerce, Custom House, New York.

Frank E. Dyson, assistant general agent, Universal Winding Co., Providence, R. I., a position he held for 17 years, has resigned to devote his entire attention to the affairs of the Electrical Products Mfg. Co., of that city, of which he is president.

Donald R. Simonds, Arcade Malleable Iron Co., Worcester, Mass., has associated himself with the Boston office Rogers, Brown & Co.

H. Owsen, formerly mechanical engineer of the Apollo Steel Co., has become assistant chief engineer of the Youngstown Sheet and Tube Co., Youngstown, Ohio.

Gilbert H. Johnson, of Isaac G. Johnson & Co., iron founders, New York, has been elected to the board of directors of the Bank of America, New York.

G. A. Binz, sales manager of the American Steam Gauge & Valve Mfg. Co., Boston, was appointed sales manager also of Schaeffer & Budenberg Mfg. Co., Brooklyn, upon the consolidation of these two companies on Aug. 1.

W. Irving Bullard, vice-president E. H. Jacobs Mfg. Co., manufacturer of mill supplies, Danielson, Conn., will sail Sept. 30 for Rio de Janeiro, Brazil, where he will attend the International Centennial Exposition as a delegate from the States of Connecticut and Massachusetts.

W. H. Cogswell, formerly with the Miller-Owen Electric Co., Pittsburgh, has become associated with H. F. Randolph, consulting electrical engineer, Oliver Building, Pittsburgh.

Charles A. Anderson, Jr., for the past five years in charge of the Philadelphia office, Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, has been transferred to the home office and promoted to the position of assistant sales manager.

E. C. Griffiths and Don B. Graze have opened offices

in the Marshall Building, Cleveland, as sales engineers under the name of Griffiths & Graze, and will handle electrical material for the M. B. Austin Co., Appleton Rubber Co., and S. H. Couch Co., Inc. Mr. Griffiths has been associated with the M. B. Austin Co., in the same territory for the past three years and Mr. Graze has devoted his attention to power apparatus in the same territory for the past nine years.

Prof. S. Timoshenko, recently of the Zagreb Polytechnic Institute of Jugo-Slavia, has joined the staff of the Vibration Specialty Co., Philadelphia, and is handling the work on elasticity of structures.

H. B. Reppetto, for many years connected with the stove manufacturing business at Wheeling, W. Va., has been made manager of the Regent Stove Co., Wyandotte, Michigan.

W. A. Shepard has resigned as secretary of the Consolidated Tool Works, Inc., 296 Broadway, New York, effective Sept. 1.

W. Clayton Farris has returned recently to New York from Japan, where he has been for three years with the Horne Co., Ltd. The first two years he spent in the Tokio office and during the remaining year he acted as manager of the Osaka branch. While in the United States, Mr. Farris will be at the New York office of the Horne Co., Ltd., 51 Chambers Street.

George Scherr of the George Scherr Co., 126 Liberty Street, New York, machine tools, left Aug. 26 on a business trip to Europe, through Italy, Austria and Germany. While in Europe his address will be care Messrs. Schuchardt & Schutte, 59 Spandauer Strasse, Berlin.

Thomas H. Wickenden and Charles McKnight, Jr., have recently joined the development and research department of the International Nickel Co., New York, to undertake development work in connection with alloy steels. Mr. Wickenden was for many years associated with the Studebaker Corporation as engineer-in-charge at the South Bend plant, and more recently associated with Zeder-Skelton-Breer Engineering Co. in a consulting capacity. Mr. McKnight was formerly works manager of the Carbon Steel Co. and engaged for many years in the production of alloy steels.

P. F. Merit, formerly vice-president of the Eastern Fuel Co., 302 Broadway, New York, has resigned. F. W. Prussen has been transferred from the New York office of this company to the traffic department in the main office, Frick Building, Pittsburgh.

Frank King has been made factory manager of the American Steam Truck & Car Co., Chicago, having resigned a similar position with the Dearborn Truck Co.

Harry Isenhardt, formerly in charge of the Pittsburgh office, Bethlehem Steel Co., and later in the Buffalo office, Jones & Laughlin Steel Co., has joined the sales force of E. W. Mudge & Co., Pittsburgh.

Edward M. Adams, first vice-president and general manager of sales Inland Steel Co., Chicago, underwent an operation for appendicitis at St. Luke's Hospital, in that city, Aug. 28. His condition is reported to be satisfactory.

### Engineers to Meet at Springfield

The Springfield, Mass., local sections of the American Society of Mechanical Engineers, in co-operation with the Engineering Society of Western Massachusetts and the Springfield Chamber of Commerce, will hold a regional meeting Sept. 25 to 27. The technical program will include sessions on paper, power, textiles and the machine shop.

Machine tool standardization, standardization of small tools, and a group of papers on the new alloys of aluminum, copper and nickel will be presented at the machine shop session.

Visits to educational institutions in Springfield and a visit to the industrial plants of Holyoke, Mass., are planned, a day being given over to an automobile trip through the Connecticut Valley to Greenfield, Mass.



## OBITUARY

### Death of Coleman Sellers, Jr.

COLEMAN SELLERS, JR., president of Wm. Sellers & Co., Inc., Philadelphia, died on Tuesday, August 15, in his 70th year after an illness of several months. His connection with the Sellers



COLEMAN SELLERS, JR.

house, then a firm, began in 1873 on his graduation from the University of Pennsylvania. After serving a practical course in the shops for several years, he took a position in the drafting room of which he soon became the head. He was appointed assistant manager in 1887, becoming at the same time a director of the company. He was elected engineer in 1902 and president in May, 1905.

His forebears in the four preceding generations showed unusual mechanical and engineering ability. The first of them came to this country from Derbyshire, England, in 1682.

His father, Coleman Sellers, a member of the Sellers firm in 1873, was one of the most brilliant mechanical engineers of his time. Coleman Sellers, Jr., also was a man of parts and of liberal ideas, and while his principal inclinations and activities were in mechanical and engineering lines, he took keen interest in science, literature, education and the arts, and was active in the civic life of Philadelphia as well as in city, State and national betterments.

He was long active in the affairs of the Franklin Institute, of which he was vice-president at the time of his death. He was a member of the Board of Commissioners of Navigation of Pennsylvania, to which he was appointed in 1907. He took special interest in the work of the American Philosophical Society, the American Society of Mechanical Engineers, the American Society of Naval Architects and Marine Engineers, and the Engineers' Club of Philadelphia, of which he was one of the founders. He was president of the Chamber of Commerce from 1909 to 1913.

As chairman of a local draft board in the early stages of this country's entrance into the war he served with such fidelity and assiduity as seriously to impair his health.

Mr. Sellers was a man of charm, kind and considerate to all with whom he had contact, whatever their station in life. He had a special sympathy for the young men of his profession. His keen sense of humor was coupled with a most unusual fund of anecdote. He was quick in repartee, but never caustic or resentful; was sedate or gay, so that his presence in any gathering imparted an atmosphere suited to the occasion.

FRANK PERLEY HOWE died at his summer home in Bristol, R. I., Aug. 24, after an illness of nearly two years. He was in his 70th year and had lived most of his life in Philadelphia, which was his birthplace. After graduating at Brown University in 1872 he took a course in mining engineering at Lehigh University. For many years he had been a factor in the Eastern iron trade, having offices in Philadelphia but spending much time at Johnson City, Tenn., in connection with the operations of the Cranberry Coal & Iron Co. and the Cranberry Furnace Co., of which he was president in recent years, succeeding H. M. Howe. He was also president of the Eastern Tennessee & Western North Carolina Railroad, a line running from Johnson City, Tenn., to Cranberry, N. C. The furnace at Johnson City was well known in the trade as a producer of

low phosphorus pig iron, which was made from the Cranberry ores brought from the adjoining State. Mr. Howe was for a number of years secretary and treasurer and later president of the Allentown Rolling Mill Co., Allentown, Pa. Other executive positions which he held at various times were the following: general manager Montour Iron & Steel Co., Danville, Pa.; president North Branch Steel Co., vice-president William Wharton Jr. & Co., president Philadelphia Roll & Machine Co.; also, for some years, president Musconetcong Iron Works, Stanhope, N. J. He was a member of the American Institute of Mining and Metallurgical Engineers.

LEWIS R. BLISS, president Ajax Iron Works, Corry, Pa., died at the Allegheny General Hospital, Pittsburgh, Aug. 26. He was born in Corry, Pa., 45 years ago, and had lived there all his life. He was active in the civic, business and fraternal circles in that city.

OLIVER A. BLACKBURN, president Eclipse Gas Coal Co., and also of the Pittsburgh Coal Producers' Association, died at the Columbia Hospital, Wilkesburg, Pa., Aug. 25, following an illness of several months. He was born at Peters Creek, Pa., Nov. 9, 1862, but had been a resident of Pittsburgh most of his life.

JOHN STEPHANS, general manager since 1902 of the Inland Steel Co.'s plant at Indiana Harbor, Ind., died of apoplexy at his home in that city, Aug. 24. He was 78 years old.

THEODORE H. COLVIN, whose death at his home in Providence, R. I., Aug. 12, was recorded in THE IRON AGE of Aug. 24, was well known in the foundry trade.



THEODORE H. COLVIN

He was a charter member of the American Foundrymen's Association, serving one year as vice-president and during a part of the year as acting president. It was a great source of pride to him that he made his own career without any financial assistance from anyone. He was one of eight children brought up on a hilly farm of Connecticut, and had only six months' schooling at a country school. He started out from home at the age of 17 to work for a farmer at the rate of \$12 a month and the next year went into the foundry to learn the trade which he followed until he started in

business at about the age of 26 with money saved since starting to work. He always found ways of acquiring such education as he required in doing business notwithstanding his limited education, and never went to any school or employed teachers. He could keep books, figure the weights and strains of any casting, making them up to 25 tons wholly from blue prints without any pattern and he devised many methods of molding heavy work which were great improvements on former methods. He designed and built the foundry plant of the Colvin Foundry Co., and although it is 25 years old, it compares favorably with many jobbing foundry plants in that section of the country to-day. He seemed to have the ability to overcome all obstacles. He was at once a remarkable executive, a thorough mechanic, a successful financier, a deep thinker and one who took great pleasure in helping others.

LEVY MAYER, prominent Chicago attorney and representative of the Inland Steel Co. in recent merger negotiations, died of heart failure in Chicago on Aug. 14, at the age of 63.

LOUIS C. STEGER, member of the board of directors and director of purchases and stores of S. F. Bowser & Co., Inc., Fort Wayne, Ind., died on Sunday, Aug. 20.

EDMUND S. CONANT, an auctioneer of national reputation and especially prominent in the New England machine tool field, died Aug. 26, at his home in Lowell, Mass.

# Machinery Markets and News of the Works

## AUGUST A QUIET MONTH

### Some Centers Show Increased Activity—Prospects for September Good

#### Several Price Advances—Otis Steel Co. Inquires for Cranes and Other Equipment

In some centers, notably Cincinnati and Milwaukee, the business in August is expected to come well up to that of June and July. In New York, Cleveland and Pittsburgh on the other hand, purchases have not been up to the previous month. There is a definite feeling throughout the trade, however, that September will bring increased activity.

Several price advances are to be noted. The Landis Tool Co., Waynesboro, Pa., has announced a 10 per cent advance, effective Aug. 15, and the Warner & Swasey Co., Cleveland, will issue new lists Sept. 1 with further price advances. Increases ranging from 5 to 15 per cent have been made in turret machinery at Cincinnati, and announcements from other manufacturers in that district are expected. In the Pittsburgh district dealers have been notified by a maker of lathes of an increase of about 10 per cent.

The Otis Steel Co. has sent out inquiry for about 25 cranes for its new steel plant and is figuring on mills, furnaces and other equipment, some of which is expected to be placed shortly. This company purchased a 36 in. lathe and is inquiring for a 96 in. shear.

## New York

NEW YORK, Aug. 29.

**W**HILE the machine-tool trade continues to look forward with confidence it can not be said that present conditions are satisfactory. Purchases of tools have dropped off materially during August as compared with June and July. The General Electric Co., Schenectady, N. Y., is still in the market and now has inquiries out for eight or ten machines, but otherwise there is very little activity except in single tools.

The Landis Tool Co., Waynesboro, Pa., has announced an advance of 10 per cent on its grinding machines and machine parts, effective Aug. 15.

The crane market is also quiet, there being few sales or inquiries.

The Department of State Railways, Santiago, Chile, is in the market for one 25-ton, two 5-ton and two 3-ton cranes and two special ore chutes, but it is not certain that the orders will come to the United States.

The Public Service Department, Los Angeles, Cal., is inquiring for one 15-ton and one 20-ton single-motor cranes.

The Southern California Edison Co. opened bids last week on a 100-ton power plant crane.

The Keystone State Construction Co., Philadelphia, has bought two used Brown Hoist locomotive cranes formerly owned by the Navy Department.

The Crompton Co., Kenilworth, Ky., contractor, has bought from Philip T. King, New York, a used 20-ton Brown Hoist locomotive crane.

Roehm & Davidson, Detroit, have bought a 5-ton, 75-ft. span, 3-motor crane from the Northern Engineering Works.

The city of Detroit has ordered a 15-ton Northern crane. The Detroit Pressed Steel Co., Detroit, has bought a 5-ton electric crane from the Northern Engineering Works.

The Semet-Solvay Co. has bought two 1-ton electric traveling cranes from the Northern Engineering Works.

The General Electric Co., Schenectady, N. Y., is still in the market, and now has a list out for eight or 10 machines, and a Cleveland company which is expected to purchase 30 tools has asked quotations.

The Weirton Steel Co., Weirton, W. Va., will probably require equipment for a new sheet mill.

The Chesapeake & Ohio Railroad contemplates the purchase of tools, but no list has been issued.

The Public Service Department of Los Angeles is inquiring for a 15 and 20-ton single-motor crane, and the Department of State Railways, Santiago, Chile, is in the market for a 25-ton, two five-ton and two three-ton cranes, also two special ore chutes.

Railroad business is coming to a head and the resumption of railroad buying noted last week in connection with the Union Pacific and Illinois Central was stimulating to the trade. The Chicago, Burlington & Quincy, which has two lists before the trade, is expected to place orders for a large number of machines this week and to close for 11 cranes.

In view of the fact that these railroad inquiries have been pending for months, present buying is regarded in some quarters as an indication that the carriers are looking for general price advances.

While railroad orders will considerably expand the bookings of dealers they suffer in comparison with buying by automotive interests, which has been going on quietly since May. The automotive industry was the principle source of gain in Milwaukee and pending inquiry is said to forecast even better activity.

Charles L. Cadle, superintendent of Public Works, Albany, N. Y., has plans in progress for the construction of three drydocks and repair shops at the State Barge Canal divisions at Waterford, Baldwinsville and Pittsford, N. Y. The equipment will comprise yard cranes and other material-handling machinery.

John Arfman, 431 East Ninetieth Street, New York, will soon take bids for a one-story automobile service and repair building, 75 x 100 ft., at 1731 Avenue A, estimated to cost \$100,000.

The Consolidated Machine Tool Corporation, 17 East Forty-second Street, New York, is disposing of a bond issue of \$3,600,000, a portion of the proceeds to be used for extensions and improvements.

The Ohio Brass Co., 50 Church Street, New York, manufacturer of brass and other electrical equipment, with plant at Mansfield, Ohio, will commence the erection of a new plant at Niagara Falls, Ont.

Power equipment, conveying machinery, tanks, etc., will be installed in the new plant to be constructed on Foster Avenue, Long Island City, by the National Liquid Bleach Co., 18 Purvis Street, New York, estimated to cost about \$500,000, with equipment.

The Eastern Sugar Corporation, a subsidiary of the Cuba Cane Sugar Corporation, 112 Wall Street, New York, has arranged for a bond issue of \$10,000,000, a portion of the proceeds to be used for extensions and improvements, additions to working capital, etc.

Joseph R. Greenwood, Long Island City, has organized a company to manufacture enameled products and has leased a building at 66 Myrtle Avenue from the Commercial Research Corporation, for a plant and headquarters. The structure approximates about 25,000 sq. ft. of floor area.

The Standard Oil Co. of New York, 26 Broadway, is perfecting plans for a refinery at Sparkill, N. Y., where it recently acquired about 1500 acres. It is said that the new refinery will cost in excess of \$1,000,000, with equipment.

The Imperial Oil Co. of Canada, a subsidiary of the Standard Oil Co. of New Jersey, 26 Broadway, New York, has plans under consideration for a new refinery at Calgary.



Also, estimated to cost in excess of \$2,000,000, including machinery.

Benjamin G. Hutchins, Inc., 990 East Thirty-fourth Street, Brooklyn, will make extensions in its two-story power house, at Avenue H and East Thirty-fifth Street, to cost about \$25,000. Lockwood, Greene & Co., 101 Park Avenue, New York, are architects.

Loading and unloading machinery, conveying equipment, power elevators, and other mechanical apparatus will be installed in the new reinforced-concrete warehouse to be constructed at Long Island City, by James Butler, Inc., 391 Washington Street, New York, wholesale grocer, estimated to cost in excess of \$1,500,000, for which bids on a general contract are now being taken. William Higginson, 21 Park Row, New York, is architect.

The American Yellow Taxi Operators, Inc., 119 West 145th Street, New York, has leased the building fronting on the East River, between Forty-ninth and Fifty-first Streets, now in course of erection, for a new service and repair works and garage.

The Koken-Chisholm Co., 178 Centre Street, New York, manufacturer of metal chairs and fixtures, will commence the erection of a two-story plant, 100 x 100 ft., at Willow Avenue and 134th Street, to cost about \$65,000. Charles B. Chisholm is head.

A vocational department will be installed in the new high school to be erected at Arlington, Poughkeepsie, N. Y., for which preliminary plans are being prepared. The Union Free School District No. 7, John F. Hooper, president, Poughkeepsie, is in charge.

The Conley Tinfoil Co., 521 West Twenty-fifth Street, New York, has filed plans for a one-story works, 152 x 362 ft., at Glendale, L. I.

The Timken Roller Bearing Co., 230 West Fifty-sixth Street, New York, with plants at Canton and Columbus, Ohio, is disposing of a stock issue of \$12,000,000, a portion of the proceeds to be used for extensions, improvements, etc., and general expansion. H. H. Timken is president.

Barnett Schacht & Sons, 279 East 148th Street, New York, operating a general iron works, will build a new one-story plant, 50 x 100 ft., on Timpson Place to cost about \$30,000.

A vocational department will be installed in the new high school addition to be erected at Manhasset, L. I., estimated to cost about \$250,000, for which bids have been asked on a general contract. F. H. Briggs, Plandome, L. I., is architect.

The Westchester Lighting Co., First Avenue and First Street, Mount Kisco, N. Y., will soon take bids for an automobile service and repair works for company trucks and cars, in connection with the new two-story, L-shaped storage building. May & Hilliard, 15 East Fortieth Street, New York, are architects.

Walter Butterfield, Wildwood, N. J., is said to be arranging a list of equipment for installation at his machine shop, now in course of completion.

The Technical Products Co., 300 Madison Avenue, New York, manufacturer of machine equipment, etc., has leased a portion of the building on Hudson Avenue near Twelfth Street, Hoboken, N. J., totaling about 10,000 sq. ft., for a new works.

The East Brunswick Mutual Power & Light Co., 40 Patterson Street, New Brunswick, N. J., has been organized with a capital of \$125,000 to equip and operate an electric power plant and system in East Brunswick Township. Klemmer Kalkreuth heads the company.

The Kessler Chemical Co., 575 Nassau Street, Orange, N. J., is in the market for one Yale & Towne duplex hoist, from 2 to 3-ton capacity.

The C. A. Bascham Mfg. Co., 1126 South Grove Street, Irvineton, N. J., is in the market for a De La Vergne oil engine, about 40 hp.

A vocational department will be installed in the new high school to be erected at Somerville, N. J., two-stories, 55 x 265 ft., estimated to cost about \$250,000, for which bids are now being taken. J. N. Pierson & Son, 175 Smith Street, 19th Avenue, N. J., are architects.

Schloss, Held & Schloss, foot of Astor Street, Newark, operating an abattoir, will build a new ice and refrigerating plant to cost \$35,000. William E. Lehman, 738 Broad Street, is architect.

J. J. Henry Muller, 113 Springfield Avenue, Newark, will build a one-story automobile service and repair building, 30 x 150 ft., at 149 William Street, for automobile trucks and cars employed in his furniture business. A. M. Kleeman, 87 Springfield Avenue, is architect.

L. W. Brazier, Basking Ridge, N. J., is in the market for a 100 hp. return tubular boiler, low pressure, self-sustained.

## Chicago

CHICAGO, Aug. 28.

RAILROAD business is suddenly coming to a head. As reported in THE IRON AGE of Aug. 24, the Union Pacific placed orders for about \$200,000 worth of machine tools. The Illinois Central has completed negotiations for \$250,000 worth of tools, exclusive of motors, the distribution of the confirming orders now being in progress. The Chicago, Burlington & Quincy is expected to place orders this week for a large number of machines. This road has two lists before the trade, one comprising 117 items for its new Denver shop, which was published in THE IRON AGE of June 29, and the other embracing seventy-eight items for existing shops at various points on the system, which appeared in our issue of May 1. The latter list has been cut down materially, but it is understood that the Denver equipment will be purchased in toto. In view of the fact that these railroad inquiries have been pending for months, present buying is regarded as an indication that the carriers are becoming apprehensive of general machine tool advances. While these orders will considerably expand the bookings of dealers, they suffer by comparison with buying by automotive interests which has been going on quietly since May. It is estimated that the Studebaker Corporation has thus far placed orders for metal working equipment involving close to \$700,000, while the purchases by the Continental Motors Co. have also been large. In the latter case a considerable share of the business went to Detroit dealers, although by no means to the exclusion of Chicago sellers.

The Chicago, Burlington & Quincy is also about to close for eleven cranes, the inquiry for which was noted in our issue of June 12. Nine of these cranes are overhead electric travelling machines for the Denver, Col., shop, consisting of two 225-ton, three 15-ton, two 50-ton, and two 10-ton cranes. There are also two gantry cranes, 105 ft. between legs and 155 ft. overall to be bought for the Aurora, Ill. scrap yard of the road. The Atchison, Topeka & Santa Fe has placed a 10-ton hand power crane of 37 ft. span with the Whiting Corporation.

The Marshall Metal Corporation, 2608 South Wells Street, Chicago, recently incorporated with \$100,000 capital stock, will manufacture a product known as Bull Dog metal, which will be used for welding aluminum. It will also manufacture steel wire brushes to be used in applying the metal. A plant containing 3000 sq. ft. of floor space has been leased at the address given. The company employs no metal-working machines, but operates coke forges, graphite crucibles, specially made molds and brush making machines. The officers are Frank E. Chamberlain, president; John J. Stream, vice-president; John R. Marshall, treasurer; Harry B. Clapp, secretary.

The Atlas Copper & Brass Mfg. Co., 3740 High Street, Chicago, has let contract for a one-story machine shop, 50 x 123 ft., at 2742-4 High Street, to cost \$12,000.

The Neely Printing Co., 412 Orleans Street, Chicago, has let contract for a three-story printing plant, 81 x 100 ft., 18 x 23 ft., and 34 x 34 ft., at 871-77 North Franklin Street, to cost \$100,000.

E. J. Brach & Sons, confectioners, 215 West Ohio Street, Chicago, have had plans prepared by Alfred S. Alschuler, 28 East Jackson Boulevard, for a three-story factory, 100 x 300 ft., to be built in three units on a site bounded by Cicero, Austin, Kilpatrick Avenues and West Kinzie Street, to cost \$1,000,000.

The Valentine Seaver Co., furniture manufacturer, 1721 Sedgwick Street, Chicago, has had plans prepared for a four-story factory, 103 x 171 x 272 ft., at George Street and North Crawford Avenue.

The Sandbo Mfg. Co. has opened a plant at 1518 Third Avenue, Moline, Ill., to manufacture automobile accessories and a patented pneumatic pump. The officers are A. I. Sandbo, Frank Maehr, Jr., and Thomas Sincos. Mr. Sandbo was the founder of the Bear Mfg. Co., Rock Island, and at present is vice-president of that corporation.

A recent gas tank explosion followed by fire resulted in \$40,000 damage to the plant of the Stockland Road Machinery Co., 3327 Easy Twenty-seventh Street, Minneapolis, Minn. The blaze was confined to the paint shop and a section of the machine shop.

The Elgin Stove & Oven Co., 14 Chicago Street, Elgin, Ill., has plans under way for a new three-story plant at North State and Schiller Streets, estimated to cost about

\$100,000. Frank D. Chase, Inc., 642 North Michigan Avenue, Chicago, is architect and engineer.

The Northeastern Iowa Power Co., Clermont, Iowa, has completed plans for a new hydroelectric power plant on the Wapsipinicon River, near Independence, Iowa. The Fargo Engineering Co., Jackson, Mich., is engineer.

The Andrews Wire & Iron Works, Inc., Preston Street, Rockford, Ill., is planning for the installation of new wire manufacturing equipment for the production of ornamental wire goods.

The United States Reclamation Service, Denver, Col., will take bids until Sept. 8, for cast iron gates, radio gates, hoists and hand rail, in connection with the Klamath, Oregon and North Platte projects. The bids will be handled under specification 286-D.

The Common Council, Kewanee, Ill., has arranged for a bond issue of \$125,000, for the construction of a municipal electric light and power plant. Plans will be prepared under the direction of J. Valmer, city engineer.

A vocational department will be installed in the new two-story and basement high school, 70 x 165 ft., to be erected at Maquoketa, Iowa, estimated to cost \$150,000, for which foundations are under way. A power house will also be built. Arthur Ebeling, Kahl Building, Davenport, Iowa, is architect.

A vocational department will be installed in the new four-story high school at Ottumwa, Iowa, estimated to cost \$700,000, for which date for receiving bids on general contract has been extended to Sept. 11. Croft & Boerner, 106 Marquette Avenue, Minneapolis, Minn., are architects.

The Chicago, Burlington & Quincy Railroad Co., 547 West Jackson Boulevard, Chicago, has completed plans for a new two-story electric power plant at McCook, Neb., estimated to cost \$85,000. A new power house will also be built at Plattsmouth, Neb., to cost \$110,000, and a similar plant at Alliance, Neb., one-story, 48 x 65 ft. A one-story addition will also be erected to the present power house at Lincoln, Neb.

The General Superintendent of Air Service, Post Office Department, Washington, will take bids early in September for a new aircraft plant at Maywood, Ill., including hangars, repair shops, service and warehouse building, estimated to cost about \$90,000.

A. W. Lucal, care of H. D. Moreland, 3701 Sheffield Street, Chicago, architect, will build a one-story automobile service and repair works, 100 x 125 ft., at 916 Madison Street, Oak Park, Ill., to cost in excess of \$70,000.

## Buffalo

BUFFALO, Aug. 28.

PLANS are under way by the Skelton Shovel Co., care of Chamber of Commerce, Dunkirk, N. Y., for the erection of new works, estimated to cost close to \$100,000.

The Common Council, Angelica, N. Y., has approved a bond issue for the construction of a municipal electric light and power plant.

The Niagara, Lockport & Ontario Power Co., Lockport, N. Y., is planning the erection of a new power plant in the vicinity of Jamestown, N. Y., and extensions in its system, estimated to cost in excess of \$750,000.

A vocational department will be installed in the new three-story high school to be erected at Cortlandt, N. Y., estimated to cost about \$400,000 for which bids will be taken at once. George W. Conable, 46 West Twenty-fourth Street, New York, is architect.

The Auto Sales & Service Corporation, 228 Williams Street, Rochester, N. Y., is planning the erection of a new service and repair building to cost about \$150,000, including machine tools and other equipment.

A vocational department will be installed in the new two-story and basement high school to be erected at Fulton, N. Y., estimated to cost about \$400,000, for which foundations will be placed under way at once. Wilson Potter, 22 East Seventeenth Street, New York, is architect.

The power house and other machinery at the plant of the Sikes Chair Co., 500 Clinton Street, Buffalo, were destroyed by fire Aug. 20, with loss estimated at \$20,000. The department will be rebuilt. Albert D. Sikes is president.

The Bolivar-Richburg Electric Co., Bolivar, N. Y., is planning for extensions in its plant and system to cost about \$30,000.

The Powertown Tire Corporation, Ridgeway Avenue, Rochester, N. Y., is planning the erection of a new one-story building, 40 x 125 ft., on East Avenue, to cost about \$45,000.

The Northeast Electric Co., 348 Whitney Street, Rochester,

will erect a steel and concrete addition, 51 x 99 ft. and 25 ft. high, to cost about \$30,000.

The recent fire at the plant of Jewett & Co., Buffalo, did not damage the foundry or the power plant in any way. The heating plant can easily be put in order. The warehouse was but slightly damaged and has already been repaired. Only the assembly building was a total loss and will necessitate suspension of production until the completion of a new building, which was started on Aug. 16, six days after the fire. The contractor, the Turner Construction Co., has promised to complete the construction on Sept. 30 and the company expects to resume production on Oct. 15. The company has a large quantity of stoves which were not in any way damaged.

## Philadelphia

PHILADELPHIA, Aug. 28.

THE Bloch Go-Cart Co., 1136 North American Street, Philadelphia, is taking bids for a new plant at 1143-47 North Third Street. Frank E. Hahn, 1112 Chestnut Street, is architect.

The Scott Paper Co., Weightman Building, Philadelphia, is planning for the completion of a new plant unit at its factory, foot of Market Street, Chester, Pa., and is arranging for the machinery installation at an early date. It will cost in excess of \$300,000, including equipment. Other extensions and improvements will bring the total investment to close to \$500,000.

A one-story power plant will be erected by the Fisher High Grade Dairies, Inc., 1935 East Willard Street, Philadelphia, in connection with its new plant on Worth Street, estimated to cost in excess of \$70,000. William H. Timm, Perry Building, is architect. Frederick Fisher is head.

The William Kyle Co., 520 Arch Street, Philadelphia, manufacturer of lighting equipment, lamps, etc., has leased the entire building at 2107-9 Vine Street, for new works.

The Fennessey & Kobler Co., Twenty-sixth and Parrish Streets, Philadelphia, manufacturer of automobile bodies, is planning for the installation of new metal-working machinery and other equipment.

A one-story power house will be constructed by the St. Joan of Arc School, Frankford Avenue and Venango Street, Philadelphia, for which plans have been prepared by Eugene S. Powers & Son, 315 South Fifteenth Street, consulting engineers.

A one-story power house to cost about \$25,000, will be constructed by Walter E. Knipe & Sons, Hancock Street, Philadelphia, at their new textile dye works at Wyoming and G Streets. W. E. S. Dyer, Land Title Building, is engineer.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, will build a new shop at its plant at Enola, Pa., for the repair of steel car wheels. The company is said to have plans under consideration for the construction of five or more new engine houses, with repair shops on sites to be selected in the State. Plans have been completed for the construction of a new grain elevator in the Girard Point section, to supplement the present plant. Contract has been let to the Sun Shipbuilding Co., Chester, Pa., for three new steel barges, to be used in connection with the new elevator.

The Wills-Sainte Claire Co. of Pennsylvania, 2033 Market Street, Philadelphia, has awarded contract to the John X. Gill Construction Co., Otis Building, for erection of a new service and repair building on Thirty-second Street, to be operated as a factory branch. W. J. Foss is president.

H. A. Jacobs, 1001 Market Street, Philadelphia, manufacturer of paper products, has purchased the five-story factory, 23 x 121 ft., at 923 Locust Street, for a new plant.

The De Frain Sand Co., Beach and Berk Streets, Philadelphia, is planning for the installation of a number of machine tools.

Fire, Aug. 24, destroyed a portion of the plant of M. L. Shoemaker & Co., Inc., Venango Street and the Delaware River, Philadelphia, manufacturer of fertilizer products, with loss estimated at close to \$200,000, including machinery. It is planned to rebuild.

L. J. Faulkner, 14 North Paxton Street, Philadelphia, has taken bids for a new two-story automobile service and repair works at 1745-51 North Broad Street, estimated to cost about \$100,000. J. J. Carroll, Middle City Bank Building, is architect.

Motors, controllers, conveying and other equipment will be installed in the new eight-story printing and publishing plant, 75 x 115 ft., to be erected by the Lutheran Publishing Co., Ninth and Sansom Streets, Philadelphia, estimated to cost about \$500,000.



The Water Bureau, Room 216 City Hall, Philadelphia, Frank H. Haven, director, will receive bids until Sept. 7, for mechanical and electrical equipment for the new Southwest sewage pumping station.

The Ford Motor Co., Highland Park, Mich., is reported to be negotiating for the purchase of the plant of the Taubel-Schiff-Kitzmiller Co., Chestnut and Elm Streets, Trenton, N. J. It will be used as an automobile assembling plant.

Andrew J. Palasky, Trenton, N. J., has acquired property in the De Pau section, Broad Street Park, and will commence the erection of a new one-story machine shop and cabinet works.

The Price Bridge Motors Co., Morrisville, Pa., is planning for the construction of a two-story machine shop and automobile service works on Bridge Street, 86 x 90 ft. O'Rourke & Hale, 77 Liberty Street, Trenton, N. J., architects.

The Hair Ice & Cold Storage Co., 3124 Fifth Avenue, Altoona, Pa., has plans nearing completion for a new three-story ice and cold storage plant, 60 x 100 ft. F. H. Seitz, address noted, is head.

Ovens and power equipment, conveying machinery, etc., will be installed in the new plant to be constructed by the Power City Baking Co., Hazleton, Pa., on property recently acquired. Plans are being drawn.

The Eastern Pennsylvania Power Co., Easton, Pa., will build a new one-story power house at Phillipsburg, N. J.

A. K. Wetzel & Sons, Shamokin, Pa., have awarded contract to the Shamokin Lumber & Construction Co. for a new two-story automobile service and repair works, 80 x 100 ft. A list of equipment is being arranged. William H. Lee, 32 South Seventeenth Street, Philadelphia, is architect.

The Bell Safety Bumper Co., Inc., 68 Thirty-fourth Street, Brooklyn, N. Y., manufacturer of automobile bumpers, etc., has tentative plans for a new factory at Bethlehem, Pa., and the removal of its present works to this location. The initial plant will give employment to about 250. The company has recently been acquired by new interests, headed by Aaron Furuch, Bethlehem, who is president.

The Confederated Home Abattoir Co., Odd Fellows Building, Bethlehem, Pa., will construct a cold storage plant in connection with its new packing plant at Allentown, Pa., estimated in cost in excess of \$300,000. The Gorman-Brown Engineering Corporation, 40 Rector Street, New York, is engineer.

A vocational department will be installed in the new high school to be erected in Conyngham Township, near Aristes, Pa., estimated in cost close to \$100,000. The Board of Education is in charge.

The Veterans' Bureau, Williamsport, Pa., is planning for the establishment of an automobile and machine repair shop and electrical repair works in the two-story building on Pine Street, recently acquired. It will be used as a trade school. Charles Billman is in charge.

The York Haven Water & Power Co., York Haven, Pa., is planning for the installation of a number of new generating units at its local power plant, to double approximately the present capacity, estimated to cost about \$1,000,000.

F. H. Wagan, Philadelphia Street and Court Alley, York, Pa., has plans under way for a three-story automobile service and repair works, 100 x 100 ft., to cost about \$75,000. J. A. Dempwolf, Cassel Building, is architect.

The Anthracite Supply Co., 75 South Penn Avenue, Wilkes-Barre, Pa., is taking bids for a new four-story building, 35 x 150 ft., to cost about \$45,000. Henry A. Maier, Coal Exchange Building, is architect.

## Detroit

DETROIT, August 28.

THE L. A. Young Industries, Inc., Detroit, manufacturer of steel springs has acquired the plant of the Denby Motor Truck Co., adjoining its works at Holbrook Street and the Grand Trunk Railroad. The building comprises about 100,000 sq. ft. of floor area, located on a 5-acre tract and will be used entirely by the new owner for spring production. The company also has work under way on a five-story addition to its main plant, to provide about 125,000 sq. ft. of space.

The Common Council, North Branch, Mich., is planning for the installation of new pumping machinery, water tank and tower, and other equipment at the waterworks. C. B. Farnsworth is clerk.

The Filer Fibre Co., Filer City, Mich., manufacturer of pulp and paper products, has awarded contract to J. Olsen, Muskegon, Mich., for a two and three-story addition, 70 x 420 ft. with extensions, 60 x 60 ft., and 30 x 50 ft., estimated to cost about \$125,000, exclusive of equipment. The

company recently disposed of a bond issue of \$500,000 for this and other expansion.

The Barley Motor Car Co., Kalamazoo, Mich., manufacturer of the Roamer automobile, is planning for expansion for the production of a new automobile to sell at a medium price. The manufacture of the Roamer car will be continued.

The Studebaker Corporation, Piquette Avenue, Detroit, has awarded contract to H. G. Christman, Stevens Building, for a five-story addition, 60 x 443 ft., to be known as plant No. 3.

The Rich Steel Products Co., Springfield Place, Battle Creek, Mich., has preliminary plans for a new three and four-story plant, estimated to cost about \$500,000, including machinery. It is expected to complete plans and proceed with the project after the first of the year.

The Common Council, Omer, Mich., has authorized the purchase of property on the Rifle River as a site for a municipal electric light and power plant. Plans will be prepared at an early date.

The Consumers Power Co., Grand Rapids, Mich., will make extensions and improvements to its power plant and system to cost about \$900,000.

The American Malleables Co., Owosso, Mich., suffered a serious fire loss on Aug. 18, but operations are again normal.

The allied Ford and Lincoln interests have the following plant units contemplated or under construction: Factory building to be erected at River Rouge, the general contract having been let to the Everett Winters Co.; alterations to the heat treating building and shipping plant of the Lincoln Motor Co. on West Warren Avenue, and a new building 1600 ft. long for general manufacturing. The Walbridge-Aldinger Co., is the general contractor on both the Lincoln additions.

Bids are being taken by Mildner-Eisen architects, on a one-story reinforced concrete factory, 37 x 195 ft., at West Fort Street and Swain Avenue for the Liberty Starter Co.

Awards on the new filtration plant, Bay City, Mich., will be decided early in September. Frazier, Ellms & Sheal, Cleveland, are the engineers.

A two-story reinforced concrete factory, 200 x 400 ft., will be erected by the Fisher Ohio Body Co., Flint, Mich.

## Baltimore

BALTIMORE, Aug. 28.

A NEW coal tipple to cost about \$300,000 including machinery will be erected by the Richmond, Fredericksburg & Potomac Railroad Co., Richmond, Va.

The Purchasing Agent, Post Office Department, Washington, will receive bids until Sept. 8, for 1000 automobile jacks; until Sept. 6, for 4000 adjustable pliers; until Sept. 8 for 400 sets of branding iron, 110 burglar-proof locking devices for Government safes, and for 20,000 ft. of single electric cable, low tension, and 5000 ft., high tension electric cable.

The Southern Yarn Conditioning Co., Winston-Salem, N. C., recently organized with a capital of \$200,000, is planning the establishment of a plant to manufacture textile machinery. A. A. Johnson and Spencer B. Hanes, both of Winston-Salem, head the company.

The Board of Harbor Commissioners, room 351 Municipal Building, Wilmington, Del., will take bids until Sept. 8 for the following equipment: One railroad track scale, 200 lb. capacity; one steam locomotive crane, 20 tons capacity, 50 ft. boom; one steam locomotive crane, 20 tons capacity, 60 ft. boom; one steam locomotive crane, 20 tons capacity, 70 ft. boom; one and two light duty, traveling, electric portal cranes, 2½ tons capacity; four portable electric dock winches, 2 tons capacity; one mechanical cargo ramp; six electric tractor trucks, with two spare battery equipments; three load carrying trucks; fifty trailers for electric tractors; fifty stevedore hand trucks. The contractor will be required to complete his contract between Jan. 1, and Feb. 1, 1923.

The West Maryland Power Co., Garrett National Bank Building, Oakland, Md., has been organized with a capital of \$250,000, by officials of the West Penn Electric Light & Power Co., Pittsburgh, as a subsidiary organization. It will take over the local municipal electric plant and system and operate as private property. Extensions and improvements will be made. Plans are also in progress for other expansion in this section.

The Office of the Public Printer, Government Printing Office, Washington, will take bids until Sept. 7 for synchronous converters, 6600-volt, 4500-kw. capacity, together with all switchboards, instruments, cable, etc.

The Chesapeake & Ohio Railroad Co., Norfolk, Va., is planning for extensions and improvements in its freight terminal to cost about \$4,000,000, including coaling pier construction and the installation of additional coal-handling machinery. It will also extend its terminal facilities at Hampton Roads, Va.

The B. Mifflin Hood Brick Co., Atlanta, Ga., has acquired the plant of the Rome Fireproofing Co., Rome, Ga., with adjoining property. It will continue the operation of the works and plans for extensions and improvements to cost about \$75,000, including the installation of additional equipment.

The Apex Coal Co., Lynchburg, Va., is perfecting plans for a new coal tippie in the vicinity of Sargent, Ky.

The Elkin Veneer & Mfg. Co., Elkin, N. C., is preparing plans for the rebuilding of the portion of its plant recently destroyed by fire. Equipment to be installed included Corliss engine and auxiliary power apparatus.

The Potomac Public Service Co., Hagerstown, Md., recently acquired by the American Water Works & Electric Co., 50 Broad Street, New York, is planning for the installation of additional machinery at Millville, W. Va., on the Shenandoah River.

The Baltimore Paper Box Co., Howard and West Streets, Baltimore, has acquired the property of the Key Mfg. Co., Key Highway, Stockholm and Covington Streets, totalling about 100,000 sq. ft. of floor area, on a two-acre site. The company will use the building for expansion, and plans for the installation of new machinery to cost about \$75,000.

The Stahl Toy & Novelty Co., New Bern, N. C., is planning for the installation of an automatic lathe and other mechanical equipment in a building acquired for a local plant. It will specialize in the manufacture of mechanical toys. K. E. Stahl is head.

A vocational department will be installed in the high school to be erected at Concord, N. C., estimated to cost about \$150,000, for which bids will be asked about Sept. 15. C. Gadsden Sayre, Anderson, S. C., is architect.

The Georgia Railway & Power Co., Atlanta, Ga., is arranging for a preferred stock issue of \$2,500,000, a portion of the proceeds to be used for extensions and improvements.

Electric pumping machinery and other power equipment will be installed in connection with the extensions to the water filtration plant at Montebello, Baltimore, estimated to cost about \$1,500,000, with equipment. Plans will be prepared under the direction of Chief Engineer Megraw, Water Bureau, Baltimore.

A vocational department will be installed in the high school to be erected at Bamberg, S. C., for which plans will be prepared at an early date. The District Board of School Trustees is in charge.

The Parry-Mann Electric Co., Columbia, S. C., is planning for the purchase of an engine-generator set, with 300 hp. engine and 225 kw. generator, with exciter, switchboard and auxiliary equipment. W. M. Parry is president.

## Indiana

INDIANAPOLIS, Aug. 28.

**A** NEW municipal electric power plant will be erected by the Board of Sanitary Commissioners, Indianapolis, in connection with a sewage disposal plant, estimated to cost about \$115,000.

The White-Wood Products Co., Crothersville, Ind., manufacturer of handles and other turned wood products, is planning to rebuild the portion of its plant destroyed by fire Aug. 16, with loss estimated at \$50,000, including machinery. Harlan White is general manager.

The Board of Blackford County Commissioners, Hartford City, Ind., will take bids until Sept. 4 for two cast iron sectional, down draft boilers, header type, 1500 sq. ft. of surface. W. C. Hughes is county auditor in charge.

The Bertsch Co., Cambridge City, Ind., manufacturer of heavy type machine tools, will soon take bids for a one-story addition, 30 x 100 ft. C. E. Werking & Son, Palladium Building, Richmond, Ind., are architects.

The Inland Body Co., Indianapolis, is perfecting plans for the removal of its plant to Columbus, Ind., where it will occupy a portion of the building of the Emerson-Brantingham Co. Charles S. Murphy is in charge.

The Universal Burner Co., Logansport, Ind., recently incorporated, with \$25,000 capital stock, is seeking a site for a plant to manufacture crude oil burners, storage tanks, etc. Allen E. Nelson, Logansport, is head of the concern.

The Interstate Car Co., Massachusetts Avenue and Sherman Street, Indianapolis, manufacturer of automobiles, has filed plans for a one-story addition.

The Conduitt Automobile Co., Indianapolis, local rep-

resentatives for the Peerless, Maxwell and Chalmers automobiles, has completed plans for a new three-story building, 63 x 200 ft., at Meridian and St. Joseph Streets, estimated to cost about \$150,000. The third floor will be used entirely as a machine and repair shop. A portion of the second floor will also be equipped for similar service for the used car department. John A. Boyd is general manager.

The Louisville Cement Co., Louisville, has arranged an appropriation of about \$500,000 for a new cement mill at Speed, Ind., to replace the portion of the works recently destroyed by fire with loss of about \$300,000. The new mill will be equipped for a capacity of 2500 bbl. per day, as compared with 1800 bbl. at the former plant. All machinery will be electrically operated.

## New England

BOSTON, Aug. 28.

**T**HE improvement in going business, manifested a week ago in the machine-tool market, apparently is dissipated. The total bookings in this district of new and used tools the past week dropped to infinitesimal figures, practically the only sale to which much importance is attached being a new vertical milling machine to a Rhode Island firm against a list of seven or eight tools. The lack of new business generally is ascribed to vacations.

The machine-tool trade is looking forward to increased business next month, when at least some of the prospects give promise of closing. The position of New England builders apparently is slowly improving and new active spots are appearing. A Hudson, Mass., maker of broaching machines is operating overtime and supplying meals to employees working evenings. The company has a substantial order from automobile makers, which includes machines as well as broaches. A northern New England gear shaper manufacturer is busy, while a Connecticut maker of lathes is on full time and a Worcester maker of grinding machinery is very busy on machines for the automobile trade. Producers of grinding wheels are increasingly busy, the demand for quick deliveries being a feature. Prices for abrasive wheels are very firm with the tendency, if anything, upward. The New England abrasive industry is slightly better than 50 per cent of normal, including export business, which is coming back slowly, contrasted with 20 per cent of normal, the low point during the business depression.

Sale by auction of the machine tools at the plant of the Morris Metal Products Co., Union Avenue, Bridgeport, Conn., Aug. 31, at 10:30 a.m., includes about 300 tools, of which there are a large number of lathes as well as milling machines, drills, etc. The auction is in charge of J. E. Conant & Co., Lowell, Mass.

Bids will be taken this week by the Boston Elevated Railway Co., Boston, for the first two units of the proposed consolidated machine shop, at Everett, Mass.

The United Electric Railway Co., Providence, R. I., is about to accept figures on a one and two-story garage and service station, 78 x 250 ft.

Contract has been awarded by the Wickwire-Spencer Steel Corporation, Worcester, to replace the structure recently destroyed by fire. The new unit will be three-stories 33 x 100 ft. and will be devoted to wire drawing.

The Atlas Body Works, Inc., McKinley Avenue, Bridgeport, Conn., will build a one-story addition, 45 x 90 ft. The present factory will be remodeled and improved, and a new power house, 15 x 30 ft., constructed. Harry E. Koerner, Bridgeport, is architect.

The Norton Co., Worcester, Mass., will commence the immediate erection of a new four-story building, 50 x 125 ft., on site near plant No. 6.

Fire, Aug. 19, destroyed a portion of the plant of the Haverhill Box Board Co., Haverhill, Mass., with loss reported at close to \$90,000, including equipment and stock.

Chaplin & Chaplin, 376 Main Street, Springfield, Mass., will erect a new automobile service and repair building, 50 x 100 ft., at Mill and Orange Streets.

A vocational department will be installed in the new four-story high school, 75 x 100 ft., to be erected at Revere, Mass., estimated to cost about \$250,000, for which work will



be placed under way at once. The local Board of Education is in charge.

J. John Kruse, 721 North Main Street, Waterbury, Conn., has inquiries out for metal card holders, about 3 x 7 in., and desires to contract with a metal-working plant to manufacture specialties of this kind.

The Carlson Brothers Tool & Machine Co., Boston, has leased the building at 15 B Street, South Boston, for a machine shop.

The Water Department, Fall River, Mass., is taking bids until Sept. 6 for a new machine and repair shop in connection with a two-story administration building to cost about \$40,000. N. C. Chase, 11 Pleasant Street, is architect. John F. Moran is superintendent of the department.

Fire, Aug. 19, destroyed a portion of the plant of the Cambridge Automobile & Wagon Co., 141-49 First Street, Cambridge, Mass., with loss estimated at \$50,000. It will be rebuilt.

The Colonial Automobile Co., 1279 Main Street, Hartford, Conn., has awarded contract to the Austin Co., 217 Broadway, New York, for a one and two-story automobile service and repair building on the Connecticut Boulevard, estimated to cost close to \$50,000.

A merger is being arranged between the M. S. Little Mfg. Co., 151 New Park Avenue, Hartford, Conn., and the A. J. Beaton Mfg. Co., New Britain, Conn., both manufacturers of heating equipment and supplies, under the name of the first noted company. The new organization will be capitalized at \$500,000. Plans are being considered for enlargements in the Hartford plant to accommodate the machinery and equipment of the Beaton company.

## Milwaukee

MILWAUKEE, Aug. 28.

**P**ROGRESS in operations and production continues to be made by manufacturers of machine tools despite the railroad shop strike which has had a serious effect on buying by the railroads. The resumption of coal shipments to local industries has made their situation more substantial and hopeful, but a free swing is not expected until transportation matters are settled. Reports from jobbers and dealers in tools show a slightly better average of business in August than in July, due largely to the fact that last month witnessed a seasonal letting down of production in the iron, steel and machinery industries, including the automotive trade. The last-named industry has furnished most of the gain this month, and pending inquiry forecasts even better activity in September and October.

The Common Council, Madison, Wis., expects to select a site before Sept. 15 for the proposed new municipal sewage disposal plant estimated to cost from \$741,000 to \$821,000. It is hoped to start construction before the end of the year. E. E. Parker is city engineer.

The Phoenix Cheese Co., Plymouth, Wis., has plans for a five-story reinforced concrete cold storage warehouse, 40 x 65 ft., the equipment of which includes a 300-hp. steam generating plant and a 20-ton artificial ice making unit. Bids will be taken after Sept. 1. R. A. Page is general manager.

The Sheboygan Foundry Co., Eighteenth Street and Union Avenue, Sheboygan, Wis., will build a two-story addition, 40 x 80 ft., to be used as a pattern shop, pattern vault, grinding room, etc. Fred Ristow is general manager.

The Automatic Seating Co., Superior, Wis., is completing the remodeling of the plant of the former American Bedding Co. at Butler Avenue and North Twenty-sixth Street, and expects to commence initial operations in September. It is a \$200,000 Wisconsin corporation which will build an all-metal frame chair. Perry J. Elkstrand is president; George Carlson, vice-president, and John Greiff, secretary and treasurer.

The Allis-Chalmers Mfg. Co., Milwaukee, has taken an order valued at approximately \$100,000 for pumps and other equipment for the Regala & Marianas Water Works Co. of Regala, Cuba. The order was placed in person by Senor M. Ortiz, general manager.

The Spring City Auto Co., Waukesha, Wis., has plans by Monroe Heath Blake, local architect, for a garage, machine shop and sales building, 65 x 200 ft., one story and basement, estimated to cost \$35,000 with equipment.

The Thompson Brothers Boat Co., Peshtigo, Wis., manufacturing metal and wooden hull power and rowboats, will build a three-story brick and mill factory addition, 60 x 100

ft., for sheet metal and wood working operations, assembling and storage. The investment in building and machinery will be about \$60,000.

The Dells Paper & Pulp Co., Eau Claire, Wis., has awarded the general contract to the C. R. Meyer & Sons Co., Oshkosh, Wis., for a new hydroelectric generating plant to develop 1000-hp. It will cost about \$165,000.

The Green Bay, Wis., Board of Vocational Education has ordered competitive plans for the new \$180,000 central continuation school at Pine and Jefferson Streets. A selection is to be made by Oct. 15 so that initial construction work may be undertaken before the close of the year. The equipment of the present school in leased quarters at 102 North Adams Street will be transferred to the new institute but much additional miscellaneous equipment will be purchased early in 1923. H. G. Stewart is director.

The Philip Meyer Mfg. Co., Racine, Wis., has been incorporated with a capital stock of \$25,000 to take over and develop the business of Philip and John Meyer, manufacturers of food choppers and other metal household utensils. A larger plant is being sought.

The Walsh Harness Co., 137 Keefe Avenue, Milwaukee, will build a two-story factory addition, 50 x 75 ft., costing about \$20,000 with equipment.

The Bergman Coal Co., Eau Claire, Wis., will establish a branch plant in Chippewa Falls, Wis., with an investment of about \$25,000. A storage building with a capacity of 1500 tons, including hoppers, screening plant, etc., for gravity loading, will be erected. A Godfrey conveyor system for unloading cars has been purchased. W. C. Bergman is manager of the new branch.

M. D. Robrecht, Antigo, Wis., will build a three-story cold storage warehouse, 40 x 100 ft., on Morse Street, which will require a 150 to 200-hp. power plant and an artificial ice and refrigerating unit. Definite specifications will be issued shortly.

The Madison Tool & Stamping Works, 1917 Helena Street, Madison, Wis., will erect a new boiler room and coal storage building to cost about \$10,000.

The Green Bay Dry Dock Co., Green Bay, Wis., expects to ask figures shortly on the construction of a new floating dry dock estimated to cost \$600,000. It will be of reinforced concrete and consist of twelve 50-ft. sections, making the dimensions 60 x 600 ft. E. J. Morrison, 53 West Jackson Boulevard, Chicago, is engineer in charge of mechanical and structural engineering. Carl Hartman is president of the drydock company.

The Anko Mfg. Co., Wausau, Wis., is increasing its capitalization to provide more adequate facilities for the production of a device for permanent installation in smokestacks and chimneys for soot absorption and fire prevention. The company was incorporated for \$50,000 a year ago and built a new machine shop, 50 x 150 ft., on a two-acre site. No immediate new construction is planned, but the equipment will be enlarged. T. G. Kohl is president.

The Dallman Machine Co., 935 Winnebago Street, Milwaukee, has purchased the rights to the manufacture of sliding gears and clutches developed by the Smith Sliding Gear & Clutch Co., North Lake, Wis. The Smith company will continue to manufacture pulleys and transmission devices, principally for tractors, traction engines and threshing outfits.

The Federal Rubber Co., Cudahy, suburb of Milwaukee, has ordered resumption of construction work on a seven-story manufacturing addition, 120 x 250 ft., of which the basement and first floor were completed about eighteen months ago. Three additional floors will be erected at this time. The general contractor is the Thomas Sideritis Co., 1591 Second Street, Milwaukee. Arthur A. Frank is general manager of the Federal company.

Ernest Heinemann of Seymour, Wis., has leased the former Paige garage building at Antigo, Wis., and will establish a machine, welding and cutting shop.

The Corona Pen Co., Janesville, Wis., has been organized with \$25,000 capital stock by S. V. Corona, J. L. Pitt and E. H. Damrow to manufacture fountain pens, metal pencils and similar goods. A plant is being established at 22 West Academy Street.

The Ingersoll-Rand Co., Minneapolis branch, will furnish and install two Cameron deep well pumps in the new municipal waterworks improvement at Stevens Point, Wis., at \$4,065 each.

William C. Schultz, Watertown, Wis., has resigned as vice-president, treasurer and general manager of the Watertown, Wis., Table Slide Co., and is organizing a new corporation with \$125,000 capital to manufacture hardwood specialties. A new factory will be erected, but the exact location has not been divulged, although it is likely that it will be in Fond du Lac, Wis.

## Pittsburgh

PITTSBURGH, Aug. 28.

**A**UGUST has been a dull month for machine tool sales in this district, but since there were good reasons for such a condition, the trade is hopeful that September will show improvement. Inquiry has been good throughout the month and in the past week some of the trade have been called upon to quote prices on an unusually large number of prospective orders. Cases are reported by machine tool salesmen who have called upon customers to find that the man in charge of purchases has been away seeking coal.

An unnamed maker of lathes in the East is reported to have advised local dealers of an adjustment in prices, which means an increase of about 10 per cent. Makers of shapers are reported to be adhering more rigidly to quoted discounts.

While current business in cranes and other heavy equipment is quiet, prospective business is good. The Jones & Laughlin Steel Co. is in the market for a ladle crane and an open hearth furnace charging machine. The Carnegie Steel Co. is asking bids on a gantry crane. The Weirton Steel Co., Weirton, W. Va., will want considerable equipment in connection with a new sheet mill it proposes to construct. Action on cranes and other equipment for the new Gary, Ind., plant of the National Tube Co., is not looked for now until next month. The Shepard Electric Crane & Hoist Co., recently took orders for three 2-ton and one ½-ton hoists for the Morrow Mfg. Co., Wellston, Ohio; two 2-ton and two 5-ton hoists for the American Bridge Co., Pittsburgh; one 2½-ton hoist for the Pittsburgh & Lake Erie Railroad, Pittsburgh; and a 1-ton and ½-ton hoist for the Edwin M. Hill Lumber Co., Pittsburgh.

The Stroh Steel-Hardening Process Co., Westinghouse Building, Pittsburgh, has plans under way for an addition to its foundry at Ridge Avenue and Chateau Street and the remodeling of the present building, estimated to cost in excess of \$200,000 with equipment. W. Y. Stroh is president.

The American Window Glass Co., Farmers' Bank Building, Pittsburgh, is planning the erection of an addition to its plant at Jeannette, Pa., to comprise a 12-machine building, with blowing machinery, tanks, glass conveyors and other equipment, estimated to cost \$1,500,000. W. L. Monro is president.

Walling & Co., 518 Washington Street, Johnstown, Pa., is completing plans for a three-story automobile service and repair works estimated to cost \$150,000. S. E. Dickey & Co., Johnstown, are architects.

The Englert Mfg. Co., 2131 Carson Street, Pittsburgh, operating an automobile battery manufacturing and repair works, has acquired property, 68 x 120 ft., at South Twenty-fifth and Jane Streets, for a new plant. Harry N. Englert heads the company.

The Keystone Hair Insulator Co., 1243 Spring Garden Avenue, Pittsburgh, has filed plans for an addition to cost about \$39,000.

The Kund & Eiben Mfg. Co., 204 Warrington Avenue, Pittsburgh, manufacturer of cabinets, etc., has plans nearing completion for a new one-story factory, 60 x 170 ft., at Bedford, Pa.

The Equitable Gas Co., 435 Sixth Avenue, Pittsburgh, a subsidiary of the Philadelphia Co., is taking bids for new mechanical and repair shops on Reedsdale Street, Northside. A warehouse will also be built.

The Westinghouse Electric & Mfg. Co., Union Building, Pittsburgh, has filed plans for a new building at Lang Avenue and Susquehanna Street, to cost about \$150,000.

The Monongahela Incline Plane Co., West Carson Street, Pittsburgh, will build a one-story power house at 106 Grandview Avenue.

The Standard Seamless Tube Co., 313 Sixth Avenue, Pittsburgh, is planning for a one-story addition at Ambridge, Pa., 80 x 475 ft.

The Du Roth Steel Truck & Car Wheel Co., 611 Keystone Building, Pittsburgh, has awarded contract to the Pittsburgh Bridge & Iron Works, Bessemer Building, for the initial building at its new plant at Osgood, Pa., one-story, 100 x 200 ft. C. Edward Long, 1202 People's Bank Building, is engineer.

The E. E. White Coal Co., Glen White, W. Va., has arranged an appropriation of about \$200,000 for additional electrical and mechanical equipment. E. E. White is president.

The American Coal Co., Piedmont, W. Va., has tentative plans for rebuilding its tippie destroyed by fire Aug. 16, with loss estimated at \$60,000, including equipment.

The Diamond Ice & Coal Co., Charleston, W. Va., is planning for enlargements in its ice and refrigerating plant, including the installation of a 160-ton refrigerating machine and auxiliary equipment.

The Board of Education, 2105 Chapline Street, Wheeling, W. Va., is said to be arranging a list of equipment for installation at its vocational schools.

The Hughes Coal Co., Shinnston, W. Va., is planning to rebuild its tippie, including the installation of new machinery. W. C. Hawkins, Fairmont, W. Va., is engineer.

S. J. Hyman, Huntington, W. Va., is organizing a company to build and operate a plant to manufacture coal by-products, estimated to cost in excess of \$80,000, including machinery. A site has been acquired.

Power equipment, a traveling oven, conveying machinery and other mechanical apparatus will be installed in the addition, 100 x 250 ft., to be erected by the Strohmann Baking Co., Huntington, W. Va., estimated to cost about \$100,000.

## Cincinnati

CINCINNATI, Aug. 28.

**T**HE month of August in the machine-tool industry will come well up to the aggregate of June and July. In the early part a noticeable falling off in orders was seen, but along toward the middle of the month buying was resumed at a fair rate, with the result that August will show a satisfactory volume of business. Manufacturers of milling machines and boring mills experienced one of the best months since the quiet period set in in 1920, while some lathe manufacturers report good orders, closely approaching the aggregate of June, which was the best month recorded for a year and a half. With a resumption of railroad buying, noticed last week in connection with the Union Pacific and Illinois Central lists, the trade generally looks for a much better situation the remaining months of the year. A local manufacturer received an order for five machines from a North Carolina railroad last week. The Westinghouse Electric & Mfg. Co. was a purchaser in the local market, negotiations having been completed for a number of machines, including a large planer. The Chesapeake & Ohio Railroad is contemplating the purchase of a fairly large number of tools, but the list has not yet been issued. Small lathes for vocational schools are in fair demand, as are multiple spindle drills.

Manufacturers of turret machinery have announced increases in prices ranging from 5 to 15 per cent, and it is expected that other manufacturers will make advances shortly.

The Cropper-Kinney Auto Spring Co., Lebanon, Ohio, has been organized with a capitalization of \$50,000 to manufacture automobile springs and will erect a plant in Lebanon. George W. Cropper is president and S. W. Kinney, vice-president.

The Clark Grave Vault Co., Columbus, Ohio, which recently disposed of its plant, has purchased the property of the Monitor Motor Car Co. at Fifth Avenue and the Big Four Railroad, and will occupy the premises immediately. Some new equipment will be installed.

The Columbus Showcase Co., Columbus, Ohio, has awarded contract to Frank Hill Smith, Inc., for a new plant, 82 x 382 ft., two stories, of reinforced concrete and brick.

Two large buildings of the American Car & Foundry Co., Jeffersonville, Ind., were damaged by a wind storm Aug. 24. The loss, including railroad equipment under repair, will amount to approximately \$200,000.

The T. J. Callahan Co., Dayton, Ohio, manufacturer of ventilating equipment, heretofore operating as a partnership, has been incorporated with a capitalization of \$200,000. No definite plans for extensions have been completed, but it is expected to install additional machinery from time to time to increase the output. T. J. Callahan is president.

The Alco Foundry & Machine Co., Hamden, Ohio, has been incorporated with a capitalization of \$50,000. It has been operating as a partnership. While no definite plans have been completed, the company expects to add a machine shop to its works in the near future and is contemplating extensions to present buildings. M. C. Abele is president.

The Engineer Division, Air Service, McCook Field, Dayton, Ohio, will take bids until Sept. 5, for one rolling mill, with one pair of plain rolls, direct-connected to electric motor.



## Cleveland

CLEVELAND, Aug. 28.

AUGUST has been a disappointing month with machine tool builders, due largely to restrictions in buying, resulting from the railroad and coal strikes, but the trade looks for considerable improvement next month. One local machine tool manufacturer reports August sales up to 75 per cent of July, but another has done only about 50 per cent as much business this month as in the previous month. Dealers' sales are holding up fairly well and new inquiries show a little improvement. Among inquiries is one from a new Cleveland company which has asked for quotations on several machines and is expected to purchase 30 machine tools.

During the week the Cleveland Board of Education purchased several machines against its recent list. Some railroad orders were closed on lists pending for some time. The New York Central purchased two large turret lathes, the Illinois Central two small turret lathes and the Union Pacific one turret lathe from a Cleveland manufacturer. A builder of automatic machinery booked four orders, each for a single machine. The Otis Steel Co. purchased a 36-in. lathe and has sent out an inquiry for a 96-in. shear. The Lima Locomotive Works, Lima, Ohio, has not yet purchased any of the equipment required for its new plant for which it has issued a tentative list.

The Warner & Swasey Co., Cleveland, following its recent price advances on turret lathes will issue new lists Sept. 1, making further slight advances on all of its machines in order to balance selling prices with production costs.

The Otis Steel Co. has sent out an inquiry for about 25 cranes of various sizes and types for its new steel plant and is negotiating on mills, furnaces and other plant equipment. Some of this business will probably be placed shortly.

The Ohio Brass Co., Mansfield, Ohio, has purchased a 16-acre site at Niagara Falls, Ont., and will erect a large factory to take care of its Canadian trade.

The Firestone Tire & Rubber Co., Akron, Ohio, has about completed a new automobile rim plant which it expects to place in operation about Sept. 1. This is a one story building 380 ft. long and 250 ft. wide, brick and steel, and has a floor space of over five acres.

The Superior Steel Wool Co., Perrysburg, Ohio, has about completed a new plant, 100 x 400 ft., for the manufacture of steel wool.

The Cleveland Board of Education will receive bids Sept. 11 for a 30 in. single finishing plane for the West technical high school.

The Barberton Machine Shop & Foundry Co., Barberton, Ohio, recently organized, will shortly begin the erection of a new plant on Robinson Avenue.

The plant of the Shunk Mfg. Co., Bucyrus, Ohio, will be moved to the former Allen Motor Co.'s plant, Bucyrus, which was purchased some time ago by John O. Shunk. New equipment will be added for the manufacture of plow units for use with tractors.

The Trump Rubber Co., East Akron, Ohio, operating at the plant formerly occupied by the Denmead Rubber Co., is planning the erection of an addition for the manufacture of automobile tires.

## The Gulf States

BIRMINGHAM, Aug. 28.

THE Thomas Grate Bar Co., Birmingham, is planning for the installation of a new 10-ton overhead electric traveling crane, with 29 ft. span and lift of 20 ft.

The McWane Cast Iron Pipe Co., Birmingham, will break ground early in September for the first unit of a new plant on property recently acquired at East Birmingham. It will specialize in small pipe from 1 to 6-in. in diameter. Employment will be given to about 150. J. R. McWane is president.

The American Can Co., 120 Broadway, New York, has awarded contract to the Turner Construction Co., 242 Madison Avenue, for a four-story addition to its plant at New Orleans, 200 x 200 ft., estimated to cost about \$750,000, including machinery.

The Dallas Power & Light Co., Dallas, Tex., will erect an electric generating plant addition, estimated to cost \$1,100,000, including machinery. Plans will be completed and work placed under way at an early date. A new 15,000-kw. turbo-generator, exciter, switchboard, boilers, pumps and auxiliary equipment will be installed.

The Baton Rouge Ice Co., Baton Rouge, La., is planning for an addition, including the rebuilding of the present

structure. Machinery will be installed to double the capacity. G. E. Wells, St. Louis, is architect.

A vocational department will be installed in the new high school to be erected at Commerce, Tex., for which bonds for \$120,000, have been voted.

The United States Engineer Office, Mobile, Ala., will receive bids until Sept. 18 for one hydraulic turbine, 1000 hp. capacity, with governor, as per specifications on file.

The White Eagle Oil & Refining Co., Kansas City, Mo., has tentative plans for a new oil terminal at Beaumont, Tex., estimated to cost about \$250,000, including pumping and power equipment, tanks, etc.

The Common Council, Pelahatchie, Fla., has authorized the preparation of plans for a municipal electric light and power plant. Swanson-McGraw, Inc., New Orleans, are consulting engineers.

The Missouri, Kansas & Texas Railroad Co., St. Louis, has arranged an appropriation of about \$5,000,000 for extensions and improvements in its shops, freight houses, yards and other properties in Texas. The shops at Denison will be made the largest on the system and about \$3,500,000 will be expended at this point. The new locomotive shops to be built at Waco will cost close to \$1,000,000, including machinery, and will be equipped for re-building locomotives. New freight depots will be constructed at Waco and Wichita Falls, each one and two-stories, 60 x 600 ft., estimated to cost about \$200,000 each, including freight-handling machinery.

The Common Council, DeQuincy, La., is arranging a bond issue of \$120,000, for a municipal electric light and power plant, and waterworks.

The Houston Power Co., Newton, Ala., will construct and operate a hydroelectric power plant at Waterford, Ala., with initial capacity of about 3000 hp. The Southern Engineering Corporation, Albany, Ga., is engineer.

The Simmons & Trawick Crate Co., Tallahassee, Fla., recently organized with a capital of \$200,000, is planning for the installation of crate and box-making machinery, conveying apparatus, etc. J. M. Simmons is president.

## The Pacific Coast

SAN FRANCISCO, Aug. 22.

THE Yuba Development Co., Hobart Building, San Francisco, is taking bids for equipment for installation at its new power plant near Marysville, Cal.; R. H. Elliott, general manager, is in charge.

The Long Beach Paper Co., Long Beach, Cal., has plans under way for a new plant on Cherry Avenue, including new equipment.

The Bureau of Yards and Docks, Navy Department, Washington, is taking bids until Sept. 13, for new shops to be erected at the naval base, San Diego, Cal.

Alexander Hursh, 12 Locust Avenue, Los Angeles, is having plans prepared for a new oil refinery at Cherry and Newport Avenues, Long Beach, Cal., to cost about \$55,000.

Perry E. Fritz, 2941 Sunrise Street, Los Angeles, has filed plans for a new one-story machine shop.

The Northwestern Electric Co., Portland, Ore., has preliminary plans under way for a new hydroelectric generating plant estimated to cost in excess of \$2,500,000 with machinery and transmission system.

The Baker Street Garage, Bakersfield, Cal., is planning for the rebuilding of its service and repair works, recently destroyed by fire. New equipment will be installed.

The Puritan Ice Co., Santa Barbara, Cal., has completed plans for a new ice-manufacturing plant at Guadalupe, Cal., estimated to cost close to \$100,000, including machinery.

The Reedley School District, Reedley, Cal., has had plans prepared for a one-story vocational and manual training building. Floyd Caskey is clerk.

The Ames Shipbuilding & Drydock Co., Seattle, Wash., will make extensions and improvements in its plant on the West Waterway, estimated to cost about \$30,000. It will include a mold loft.

The Washington Iron Works, Seattle, Wash., will commence work on the first unit of its new plant, to comprise a two-story steel building, 70 x 570 ft., estimated to cost \$100,000. It will be equipped as a boiler and tank shop. Other units will be built later. The entire plant will cost about \$500,000.

Fire, Aug. 17, destroyed the plant of the A. C. White Lumber Co., Laclede, Idaho, including buildings, machinery, power equipment, etc., with loss estimated in excess of \$500,000. It is planned to rebuild.

The Booth-Kelly Lumber Co., Eugene, Ore., is completing plans for the construction of a new mill at Wendling, Ore., to replace the plant recently destroyed by fire. A. C.

Dixon, manager, is in charge. It will be electrically operated.

Brewer & Baldwin, Winlock, Wash., are considering rebuilding their shingle mill, recently destroyed by fire. Electrically-operated machinery will be installed.

## The Central South

ST. LOUIS, Aug. 28.

**P**LANs are in progress for a new three-story factory for the Davis Boring Tool Co., 3722 Forest Park Boulevard, St. Louis, estimated to cost \$160,000, including machinery.

The Edina Light Co., Edina, Mo., has acquired the electric plant and property of the Merchants' Power & Light Co., Novinger, Mo. The new owner plans for extensions and improvements.

Fire, Aug. 18, destroyed a portion of the plant of the Brooklyn Cooperage Co., Poplar Bluff, Mo., with loss estimated at about \$100,000, including machinery. It is planned to rebuild. Headquarters of the company are at 142 Kent Avenue, Brooklyn, N. Y.

The City Ice Co., Twenty-first and Campbell Streets, Kansas City, Mo., is arranging for the construction of a new ice and cold storage plant with initial capacity of about 3000 tons.

The Air Terminal Association, 422 Reliance Building, Kansas City, Mo., recently organized, will install a repair shop in connection with its new hangars and air terminal buildings on local site. James B. Harvey is general manager.

Paul Sheridan, Fort Smith, Ark., has awarded contract to the J. H. Reddick Co., Fort Smith, for a two-story addition, 72 x 140 ft., to his automobile service and repair works, estimated to cost \$35,000, exclusive of equipment.

The Thomas Fruit Co., Sixth and Kentucky Streets, Joplin, Mo., is arranging for extensions and improvements in its ice and refrigerating plant, estimated to cost about \$35,000. Smith & Van Pelt, 819 Frisco Building, are architects. A. B. Thomas is president.

The Memphis Sash & Door Co., 673 South Dudley Street, Memphis, Tenn., is planning for the erection of a new three-story factory 200 x 300 ft., estimated to cost in excess of \$80,000.

A vocational department will be installed in the new two-story high school to be erected at Dadesville, Mo., 60 x 100 ft., for which plans are nearing completion. Earl Hawkins & Co., McDaniel Building, Springfield, Mo., are architects.

The Indiana Board & Filler Co., Vincennes, Ind., recently organized a capital of \$750,000, has acquired the plant and business of the Tennessee Fibre Co., North Memphis, Tenn., and will operate the plant for the manufacture of strawboard and fibre specialties. Plans are under way for enlargement and the installation of additional machinery.

The Dexter Helium Co. of America, Winfield, Kan., M. W. Baden, president, has preliminary plans in progress for a new helium plant at Dexter, Kan., estimated to cost about \$1,000,000. It will include power house, mechanical shop, etc.

The White Trunk Co., 217 West Lewis Street, Wichita, Kan., is planning for the installation of machine tools, belting, shafting and other transmission equipment. J. F. Kemel is manager.

The Missouri Lumber Co., Hot Springs, Ark., is planning to rebuild the portion of its plant on Gaines Avenue, recently destroyed by fire with loss estimated at \$80,000, including equipment.

A vocational department will be installed in the three-story and basement high school to be erected at Lockwood, Mo., for which foundations are now under way. Charles Sudhoelter & Co., 715 Joplin Street, Joplin, Mo., are architects.

The Log Mountain Coal Co., Middleboro, Ky., recently organized with a capital of \$2,500,000 to form a merger of seven coal mining companies operating in Bell County, Ky., has plans under consideration for the installation of new electrical and mechanical equipment, including mine cars, etc. E. S. Helburn is president, and J. R. Ramey, treasurer, both of Middleboro. J. E. Justice, Williamsburg, Ky., is chief engineer.

The Continental Asphalt & Petroleum Co., Oklahoma City, Okla., will install new crushing, grinding and mixing machinery at its rock asphalt deposits at Sapulpa, Okla., for the establishment of a new plant. A power house will also be established.

A vocational department will be installed in the new two-story and basement high school to be erected at Wetumka, Okla., estimated to cost about \$100,000, for which bids on a general contract are being received. Tonini & Bramblet, Terminal Building, Tulsa, Okla., are architects.

## Canada

TORONTO, Aug. 28.

**M**ACHINE-TOOL buying on a conservative scale was noted the past week. The opening of the Canadian National Exhibition at Toronto on Aug. 26, which will be continued until Sept. 9, gives dealers and manufacturers an opportunity to show their special lines of tools and general equipment in actual operation, and as a result a buying movement is expected to develop next month. Notwithstanding the limited amount of buying, manufacturers state they have considerable orders on their books and that the outlook for the future is bright. Plant operations have been steadily increasing and if a fuel famine does not strike the country this winter a continuation of present activities is looked for. Many industrial concerns have recently been organized for the purpose of locating manufacturing plants in Ontario and other provinces and numerous plants are under construction for which requirements have not yet been placed. Equipment for public works is still moving steadily and manufacturers of paper making machinery report active operations with a steady increase in productive capacity. Small tools are moving freely.

The Fedders Mfg. Co., Ltd., Bridgeburg, Ont., is in the market for a spot welder, similar to No. 312B Federal machine; 220 volts, 25 cycle, three phase.

The sawmill owned by Ritchie Brothers, Aylmer, Que., was destroyed by fire with a loss of \$50,000. Rebuilding operations are expected to start at an early date.

Bids will be called shortly by the town of Chilliwack, B. C., for the construction of a sewage system. The work will include an additional pumping station equipped with 4-in. vertical centrifugal pumps, electrically driven with automatic float control.

John S. Martin, Reeve, Port Dover, Ont., will receive bids until Sept. 8 for waterworks plant and necessary equipment to cost \$60,000. James, Proctor & Redfern, Ltd., 36 Toronto Street, Toronto, are engineers. Gas and electric pumps will be installed.

The Canadian National Railways have started work on the erection of car shops at Edmonton, Alta., to cost \$200,000.

D. Brill, Georgetown, Ont., contemplates erecting factory there to cost \$10,000.

The Canadian Brake Shoe & Foundry Co., 354 St. James Street, Montreal, contemplates erecting a foundry at Sherbrooke, Que.

Fire at the plant of the Groves-Bigwood Lumber Co., Byng Inlet, Ont., caused damage to machinery and buildings to the amount of \$175,000. The power plant and planing mill are a total loss.

The Bruce Wood Workers, Ltd., Chesley, Ont., are in the market for a 30-hp., 60-cycle, three phase, 220 volt motor.

The round house and machine shop owned by the Eastern British Columbia Railway at Cordin, near Fernie, B. C. were totally destroyed by fire Aug. 21, with loss to buildings and equipment estimated at \$70,000.

The Dryden Paper Co., Dryden, Ont., is making progress in the development and expansion of its plant. It is developing a further 1200 hp., and the paper plant is being enlarged with a view to doubling the present capacity. A small ground wood mill is also being constructed.

The Brightman Mfg. Co., Columbus, Ohio, manufacturer of finished steel, shafting machinery and cold-finished nuts, which for 26 years has been jointly owned by L. H. Brightman, Long Beach, Cal., and his seven children, now passes into the control of Mrs. Brighton, who will operate the business with the assistance of S. D. Shearer, Cleveland, her brother-in-law. The business was brought to Columbus 12 years ago from Shelby, Ohio. L. H. Brightman has not been active for several years. In the near future the four sons will erect a plant at Columbus, to manufacture the same products and an added line of screw machine products.

At the directors' meeting of the Sharon Pressed Steel Co., 47 West Broadway, New York, held Aug. 7 to fill vacancies in the directorate and executives, the following officers were elected: H. W. Torney, president; A. E. Swan, vice-president; T. A. Pierce, treasurer; Harold G. Mosier, secretary. The retiring directors were: W. L. Ulmer, W. H. Watkins, L. L. Knox and W. J. Parker. These vacancies were filled by L. B. Le Bel, vice-president and director Cleveland Discount Co.; Edward O. Peck, secretary and director Cleveland Discount Co.; Harold G. Mosier, attorney, Cleveland, and A. E. Swan, first vice-president Sharon Pressed Steel Co.



## NEW TRADE PUBLICATIONS

**Pumps.**—The Trane Co., La Crosse, Wis., Bulletin No. 2, a handbook of practical information on condensation, circulating and similar pumps. The bulletin has been enlarged from an 8-page bulletin which was exclusively devoted to Trane condensation pumps, the present 24-page publication being the company's response to requests from its customers for practical information on other pumps used for the mechanical equipment of buildings. It is intended especially for engineers, architects and heating contractors.

**Hoists.**—The Northern Engineering Works, Detroit. Bulletin illustrative and descriptive of type D electric hoist, electrically operated and portable. The hoist comes in three sizes of 500, 1000 and 2000 lb. capacity.

**Mine Apparatus.**—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Illustrated publication of 64 pages of mining apparatus. In addition to line material, the publication, known as Catalogue 6-M, contains much information about mine safety switches, Frankel solderless connectors, tapes, habbitts, solders, micarta gears, mine locomotives and mine locomotive headlights.

**Centrifugal Pumps.**—Pennsylvania Pump & Compressor Co., Easton, Pa. Bulletin No. 202 describing the company's line of double suction single stage centrifugal pumps and containing useful engineering data.

**Railroad Equipment.**—Whiting Corporation, Harvey, Ill. Catalog No. 160, 12 in. x 9 in. Devoted to improved methods in hoists and transfer tables. Data are supplied comparing methods in use. A model plant layout and hoist installment are shown in blueprints. The catalog is elaborately illustrated on coated paper, the larger share of the 52 pages being devoted to actual pictures, with brief, direct descriptions.

**Mayari Pig Iron.**—Bethlehem Steel Co., Bethlehem, Pa. Booklet 19. Treating of the native content of various elements in Mayari pig iron, with particular reference to its qualifications for making castings. Fractures of the iron of varying silicon content are shown, with descriptions and illustrations of its uses, such as power plant headers, motor cylinders, etc. The introduction portrays the region where the nickel-chromium Mayari ore is obtained. In the last three of the 30 pages appears complete analyses in tabular form of products made from Mayari ore.

**Metal Sash.**—David Lupton's Sons Co., Philadelphia. Catalog No. 11. Consisting of 191 pages, elaborately bound, tracing the advance in making sold steel sash for commercial and residential buildings. Improvements for securing abundant fresh air and sunlight are described and illustrated. Suggestions for builders and helpful hints for ordering and making specifications are given in tables, diagrams and charts. Special tables aim to show the principles governing air currents in large structures. A separate 42-page catalog, similar in design, but with prints in color and tinted pictures, shows the adaptations of modern casements and double-hung windows. By diagram and description special features and new designs are shown.

**Factory Drinking Water Systems.**—Armstrong Cork & Insulation Co., Pittsburgh. Illustrated booklet, "A Neglected Source of Economy," presenting the merits of modernized drinking water systems in industries, showing possibilities for economy in time and labor.

**Cast Iron Storage Tanks.**—Conveyors Corporation of America, 326 West Madison Street, Chicago. Booklet, 4 x 8 in., giving details of the construction and installation of the American cast iron storage tank, designed for loose, bulky, dry materials. Engravings show tanks in use. Comprehensive tables of weights and measures employed in tank construction are included.

**Oil Burning.**—Schütte & Koerting Co., Philadelphia. Catalog devoted to mechanical fuel oil-burning systems and atomizing by low or high pressure air or steam. Installation, use and maintenance of oil-burning agents are covered at length. The relative merits of mechanical spray oil burners, the purpose of air control registers, and the effects of carbon deposits are demonstrated. The catalog is richly illustrated in colors and contains 25 tables of valuable data.

**Material Handling.**—Roeper Crane & Hoist Works, 1720 North Tenth Street, Reading, Pa. Catalog No. 52, which illustrates and describes trolleys, chain hoists, turntables and switches, and also shows by descriptive diagrams the relation of parts when installed.

**Shears.**—Niagara Machine & Tool Works, 637 North-

land Avenue, Buffalo. A special bulletin treating on the proper care of squaring shear knives and carrying instruction in attaching, regrinding and adjustment. Suggestions for shear tests are offered.

**Architects' Hand Book.**—Truscon Laboratories, Caniff and Grand Trunk Railroad, Detroit. An architects' and engineers' aid, entitled, "Architects' Specification Handbook," of 108 pages, 8½ x 11 in. in size, in loose leaf binding. The specifications relate especially to water-proofing, damp-proofing or other coating work.

**Boiler Tubes.**—Parkesburg Iron Co., Parkesburg, Pa. Illustrative folder sketching in brief the processes of making charcoal iron boiler tubes.

**Wire Forming and Special Machinery.**—Baird Machine Co., Bridgeport, Conn. Circular outlining the needs and development in machinery for specific industries, sprinkled with human interest discussions of a business flavor. Some 25 Baird bulletins on special machinery are listed on the back cover.

**Optical Pyrometer.**—Scientific Materials Co., Pittsburgh. Generously illustrated. 16-page booklet, 6 x 10 in., giving a scientific exposition on the theory, design and use of the F. & F. pyrometer, and including a Fahrenheit-Centigrade conversion table, formulas governing pyrometer construction, and tables for determining the true when given the apparent temperature.

**Ash Conveyor.**—United Conveyor Corporation, 1500 Old Colony Building, Chicago. Bulletin 105, contrasting old and new methods of ash disposal. Illustrations and lettered diagrams give data on installing the equipment.

**Feed Water Softeners.**—Graver Corporation, East Chicago, Ind. Bulletin No. 504, covering feed water softening in steam power plants and the Graver hot process water softener, designed especially for such work. The booklet consists of 20 pages and goes into the subject with thoroughness.

**Motor Starters.**—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Folder 4500, describing a line of motor starters, with numerous comprehensive illustrations.

**Tumbling Barrels.**—J. W. Paxson Co., Philadelphia. Bulletin No. 40, superseding No. 27, pages 36, gives complete illustrated information concerning steel channel stove rumbler tumbling barrels and cleaning room equipment.

**Hardening Furnaces.**—Tate-Jones & Co., Inc., Pittsburgh. Illustrated bulletin No. 164-B, superseding 164-A, describes general hardening furnaces of the semi-muffler type for oil or gas fuel.

**Automatic Electric Hardening Furnaces.**—Automatic & Electric Furnaces, Ltd., 281 Gray's Inn Road, London, England, W. C. 1. Illustrated description and discussion of the principles and applications of the Wild-Barfield automatic furnaces for the correct hardening of steel.

**Electric Heating Furnaces.**—F. J. Ryan & Co., Philadelphia. Pamphlets, Common Sense Talks Nos. 1 and 2 on "Electric Heat; What Is It?" and "The Electric Resistor."

## New Books Received

**Mexican Petroleum.** Pages 300, 5½ x 7¾ in. Published by the Pan American Petroleum & Transport Co., 120 Broadway, New York, N. Y.

**World Metric Standardization.** By Aubrey Drury. Pages 524, 6 x 9 in., illustrated. Published by World Metric Standardization Council, 681 Market Street, San Francisco. Price, \$5.

**The Journal of the Institute of Metals.** Vol. XXVII. Edited by G. Shaw Scott, secretary. Pages 621, 5¼ x 8¼ in., illustrated. Published by the Institute of Metals, 36 Victoria Street, London, S. W. I. Price, 31s. 6d.

**Petroleum, Where and How to Find It.** By Anthony Blum. Pages 367, 4¾ x 6¾ in. Published by the Modern Mining Book Publishing Co., 905 North Dearborn Street, Chicago. Price, \$2.

**Factory Storeskeeping.** By Henry H. Farquhar. Pages 182, 6 x 9 in.; illustrations 36. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$2.50.

**Methods of the Chemists of the United States Steel Corporation for the Sampling and Analysis of Pig Iron.** Pamphlet, pages 40, 6 x 9 in. Published by the Carnegie Steel Co., Bureau of Instruction, Pittsburgh.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

## Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	2.94c.
Swedish bars, base price	7.00c.
Soft steel bars, base price	2.94c.
Hoops, base price	4.14c.
Bands, base price	3.74c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base	3.04c.
Channels, angles and tees under 3 in.	
x ¼ in., base	2.94c.

## Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	2.94c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.14c.
Toe-calk, ½ x ¾ in. and larger	4.00c.
Cold-rolled strip, soft and quarter hard	6.25c. to 7.25c.
Open-hearth spring steel	4.25c. to 6.00c.
Shafting and Screw Stock:	
Rounds	3.65c.
Squares, flats and hex.	4.15c.
Standard cast steel, base price	12.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

## Tank Plates—Steel

¼ in. and heavier	3.04c.
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## Sheets

	Per Lb.
<i>Blue Annealed</i>	
No. 10	4.04c.
No. 12	4.09c.
No. 14	4.14c.
No. 16	4.24c.

## Box Annealed—Black

	Soft Steel	Blued Stove
	C. R., One Pass,	Pipe Sheet,
	Per Lb.	Per Lb.
Nos. 18 to 20	4.15c. to 4.40c.	.....
Nos. 22 and 24	4.20c. to 4.45c.	4.60c.
No. 26	4.25c. to 4.50c.	4.65c.
No. 28	4.35c. to 4.60c.	4.75c.
No. 30	4.60c. to 4.85c.	.....
No. 28 and lighter, 36 in. wide, 10c. higher		

## Galvanized

	Per Lb.
No. 14	4.45c. to 4.70c.
No. 16	4.60c. to 4.85c.
Nos. 18 and 20	4.75c. to 5.00c.
Nos. 22 and 24	4.90c. to 5.15c.
No. 26	5.05c. to 5.30c.
No. 27	5.20c. to 5.45c.
No. 28	5.35c. to 5.60c.
No. 30	5.85c. to 6.10c.
No. 28 and lighter, 36 in. wide, 20c. higher.	

## Welded Pipe

Standard Steel		Wrought Iron	
	Black Galv.		Black Galv.
½ in. Butt	—53 —38	¾ in. Butt	—23 —5
¾ in. Butt	—58 —45	1½ in. Butt	—25 —7
1-3 in. Butt	—60 —47	2 in. Lap	—19 —3
2½-6 in. Lap	—57 —44	2½-6 in. Lap	—23 —7
7-8 in. Lap	—53 —30	7-12 in. Lap	—15 —1
9-12 in. Lap	—49 —30		

## Steel Wire

	Per Lb.
Bright basic	3.50c. to 3.75c.
Annealed soft	3.50c. to 3.75c.
Galvanized annealed	4.25c. to 4.50c.
Coppered basic	4.00c. to 4.25c.
Tinned soft Bessemer	5.50c. to 5.75c.

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet	18½c. to 19½c.
High brass wire	19½c. to 20½c.
Brass rod	16½c. to 17½c.
Brass tube, brazed	25½c. to 26½c.
Brass tube, seamless	22½c. to 23 c.
Copper tube, seamless	24½c. to 25 c.

### Copper Sheets

Sheet copper, hot rolled, 24 oz., 21½c. to 22½c. per lb. base.	
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	

### Tin Plates

Bright Tin	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	Coke—14-20	Primes	Wasters
			80 lb.	\$6.05	\$5.80
			90 lb.	6.15	5.90
			100 lb.	6.25	6.00
	IC.. \$10.00	\$8.50	IC..	6.40	6.15
	IX.. 11.50	10.00	IX..	7.40	7.15
	IXX.. 13.00	11.25	IXX..	8.40	8.15
	IXXX.. 14.25	12.50	IXXX..	9.40	9.15
	IXXXX.. 16.00	14.00	IXXXX..	10.40	10.15

### Terne Plates

8-lb. coating, 14 x 20	
100 lb.	\$7.00
IC	7.25
IX	7.50
Fire door stock	9.00

### Tin

Straits, pig	36c.
Bar	43c. to 47c.

### Copper

Lake ingot	15½c.
Electrolytic	15 c.
Casting	14½c.

### Spelter and Sheet Zinc

Western spelter	8 c. to 8½c.
Sheet zinc, No. 9 base, casks	9c. open 9½c.

### Lead and Solder\*

American pig lead	6½c. to 7c.
Bar lead	8c. to 8½c.
Solder, ½ and ½ guaranteed	25c.
No. 1 solder	23½c.
Refined solder	20½c.

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

Best grade, per lb.	75c.
Commercial grade, per lb.	35c.
Grade D, per lb.	25c.

### Antimony

Asiatic	6½c. to 7c.
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### Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	25c. to 27c.
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### Old Metals

Business is quiet but the market holds up fairly well. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.75
Copper, heavy wire	11.25
Copper, light and bottoms	9.25
Brass, heavy	6.25
Brass, light	5.25
Heavy machine composition	8.50
No. 1 yellow brass turnings	6.50
No. 1 red brass or composition turnings	8.00
Lead, heavy	4.50
Lead, tea	3.50
Zinc	9.25



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